VOLUME I SEPTEMBER, 1908 NUMBER 3

THE SOUTHERN MEDICAL JOURNAL

EDITORIAL STAFF

Duncan Eve, M.D.
S. S. Crockett, M.D.
A. B. Cooke, M.D.
Wm. Litterer, M.D.
S. M. Bloomstein, M.D.
J. P. Kellen, M.D.
M. M. Cullom, M.D.
W. D. Haggard, M.D.
G. C. Savage, M.D.
L. E. Burch, M.D.
Hilliard Wood, M.D.
Geo. H. Price, M.D.
Perry Bromberg, M.D.
Geo. C. Trawick, M.D.

J. A. Witherspoon, M.D., Editor-in-chief.

W. A. Bryan, M.D.
J. M. King, M. D. | Managing Editors.

COLLABORATORS

LOUISVILLE, KY.
Jno. G. Cecil, M.D. L. S. McMurtry, M.D.
J. S. Marvin, M.D.
Jos. McD. Mathews, M.D.

NEW ORLEANS, LA.
Rudolph Matas, M.D.
F. W. Farham, M.D. C. Jeff. Miller, M.D.

ATLANTA, GA.
Floyd W. McRae, M.D. Geo. H. Noble, M.D.
F. P. Calhoun, M.D.

RICHMOND, VA.
George Ben. Johnston, M.D.
C. Tompkins, M.D. Stuart McGuire, M.D.

MEMPHIS, TENN.
Wm. Krauss, M.D. Heber Jones, M.D.
J. A. Crisler, M.D. Bettie Malone, M.D.
W. B. Rogers, M.D. B. F. Turner, M.D.

BIRMINGHAM, ALA.
J. D. S. Davis, M.D. L. C. Morris, M.D.

MOBILE, ALA.
Seale Harris, M.D. H. T. Inge, M.D.

Oscar Dowling, M.D. Shreveport, La.
L. L. Hill, M.D., Montgomery, Ala.
G. R. Holden, M.D., Jacksonville, Fla.
W. W. Crawford, M.D., Hattiesburg, Miss.
Jas. B. Bullitt, M.D., Oxford, Miss.
Chas. L. Minor, M.D., Asheville, N. C.
Jno. W. Long, M.D., Greensboro, N. C.
Benj. D. Bosworth, M.D., Knoxville, Tenn.
Bacon Saunders, M.D., Ft. Worth, Texas.
Eugene R. Corson, M.D., Savannah, Ga.
T. D. Coleman, M.D., Augusta, Ga.
H. A. Royster, M.D., Raleigh, N. C.
Manning Simons, M.D., Charleston, S. C.
Le Grand Guerry, M.D., Columbia, S. C.
C. Holtzclaw, M.D., Chattanooga, Tenn.
Chas. M. Rosser, M.D., Dallas, Texas.
Wm. V. Lawe, M.D., Hot Springs, Ark.

EDITORIAL OFFICES

No. 529 1-2 CHURCH STREET

Published Monthly by Snell Brothers Company, Nashville, Tenn.

Price $2.00 Per Annum Single Number 25 Cents

Entered as Second Class matter, July 6, 1908, at the Postoffice at Nashville, Tenn., under the Act of March 3, 1879.

E. FORREST HAYDEN, Ph. G. M. D.
Professor of Nervous and Mental Diseases, Medical Department University of the South.

DANIEL R. BROWN, M. D.
Assistant Professor of Nervous and Mental Diseases, Medical Department University of the South.

PHONE MAIN 1421

THE HAYDEN AND BROWN SANITARIUM

FOR THE TREATMENT OF

ALCOHOL AND DRUG ADDICTIONS AND DISEASES OF THE NERVOUS SYSTEM

A private Sanitarium owned and operated by ethical Physicians and conducted upon strictly ethical lines. Large and commodious building. Homelike in every respect. Steam heat throughout. Hot and cold water. Turkish, spray, and other baths. Large and shady grounds. All modern Medical and Electrical appliances necessary. Much experience in treating this class of diseases. Resident Physicians. Experienced trained nurses. Best of references, medical and otherwise. Reasonable terms.

For particulars, address,

DRS. HAYDEN & BROWN, 1400 Broadway, Nashville, Tenn.

EVE'S SURGICAL INFIRMARY

Located on Broad Street, just opposite Stonewall Street, in the highest, healthiest and most desirable portion of the city. Buildings roomy and well ventilated, home-like, free from institutional features, and devoted exclusively to **Surgical Cases.** Grounds ample and well arranged. **Surgical Operations** done with the strictest Antiseptic and Aseptic precautions.

RATES REASONABLE

DRS. DUNCAN & PAUL F. EVE, NASHVILLE, TENN.

The City View Sanitarium

Located on Murfreesboro Road, 2 miles south of Nashville, Tenn.

An ethical private institution for the treatment of mental and nervous diseases and a selected class of Alcoholic and Drug addictions. Commodious, well arranged and thoroughly equipped building. Home-like in surroundings and management. Modern in every particular. Specially trained nurses. Rates from $15 per week upward.

Consultants—Dr. Duncan Eve, Dr. Wm. G. Ewing, Dr. J. A. Witherspoon, Dr. Paul F. Eve, Dr. S. S. Crockett, Dr. L. B. Graddy, Dr. W. W. Core.

JOHN W. STEVENS, M. D., Physician-in-Charge

'Phone Main 2928 **NASHVILLE, TENN.** **Rural Route No. 1**

University of Tennessee
Department of Medicine

Offers to the Southern medical student exceptional advantages in clinical teaching, laboratory instruction and didactic work. This department gives a four years' graded course, covering all branches of medicine minutely, leading to the degree of M. D.

Catalogue or other information will be gladly furnished upon request to

HILLIARD WOOD, M. D., Dean

Or D. A. BLAKE, M. D. Treasurer,

612, 614 Broadway **Nashville, Tenn.**

TABLE OF CONTENTS.

Frontispiece—Dr. T. T. Schumpert, Shreveport, La.

ORIGINAL ARTICLES.

1. What We Should Know About Malarial Disease. *William Krauss, M.D.,* Memphis, Tenn..... 141
2. The Present Status of the Treatment of Exopthalmic Goiter. *John R. Wathen, A.B., M.D.,* Louisville, Ky. 147
3. Diagnosis of Sarcoma. *W. A. Bryan, A.M., M.D.,* Nashville, Tenn. 151
4. Total Extirpation of the Urinary Bladder. *W. Kohlmann, M.D.,* New Orleans, La. 160
5. Diseased Maxillary Antrum. *B. D. Sibley, M.D.,* Birmingham, Ala. 162
6. Some Vascular Pathology on Pregnancy. *S. S. Crockett, M.D.,* Nashville, Tenn. 166
7. The Leucocytes in Appendicitis. *Raymond Custer Turck, M.D.,* Jacksonville, Fla. 169
8. Urinary Infections in the Practice of Obstetrics. *Christopher Tompkins, M.D.,* Richmond, Va. .. 178
9. Renal Tuberculosis. *Le Grand Guerry, M.D.,* Columbia, S. C. 183

EDITORIALS 185

Program of Tuberculosis Congress 187

REPORT OF CASES.

A Case of Acute Poliomyelitis Anterior. *Thomas Weaver, M.D.,* Nashville Tenn. 190

A Case of Congenital Pyloric Stenosis, and a Case of Congenital Pyloric Spasm. *S. M. Bloomstein, M.D.,* Nashville, Tenn. 192

HISTORY AND BIOGRAPHY.

Sketch of the life of Dr. T. E. Schumpert. *Oscar Dowling, M.D.,* Nashville, Tenn. 195

ABSTRACTS OF CURRENT LITERATURE.

MEDICINE.

Primary Tuberculosis of the Mesenteric Glands 195

Morphology of the Blood in Pertussis 195

Differential Blood Count as an Aid in the Diagnosis of Empyema of Children 196

Appendicitis: Extra Significance of Left-sided Pain 197

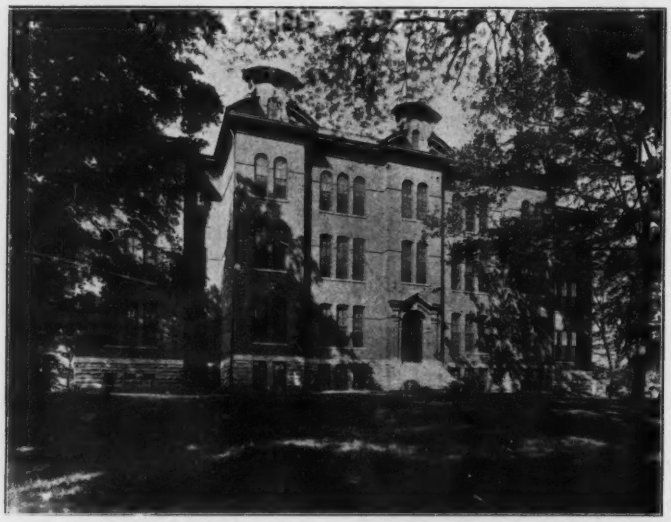
A Pathognomoric Symptom (or Sign) of Appendicitis not Hitherto Described 197

Some Experiments in the Treatment and Prevention of Infection in Enteric Fever 197

On the Relation of Typhoid to the Biliary Passages 199

BEECHHURST SANITARIUM

LOUISVILLE, KY.



A thoroughly modern and well equipped psychopathic hospital for the treatment of nervous and mental diseases, drug addictions and alcoholism. Ample Buildings. Detached apartments for special cases. Twenty-five acres wooded lawn. High and retired.

M. H. YEAMAN, M. D.,
Supterintendent,
(Late Supt. Centrai Ky. Asylum.)

H. B. SCOTT, A.M.M.D.,
Asst. Physician.

LONG DISTANCE PHONES.
Cumberland - E. 257a
Home - - - - 3555

Post-Graduate MEDICAL SCHOOL of Chicago

2400 Dearborn Street, Chicago

W. F. COLEMAN, M.D., President W. L. BAUM, M.D., Treasurer ARTHUR R. ELLIOTT, M.D., Vice Pres
F. A. BESLEY, M.D. FRANKLIN H. MARTIN, M.D., Secretary

SPECIAL ANNOUNCEMENT

Two General Courses—Each Three Weeks

FIRST: September 28 to October 19. SECOND: October 19 to November 9.
The Student is not bound to the above dates. He can begin his course at any time.

GENERAL COURSE, $25.00,

Includes General Surgery, Medicine, Gynecology, Ear, Nose and Throat, Children's Diseases, Rectal Diseases and Diseases of the Eye; and all operative work of the various hospitals.

SPECIAL COURSES

In Pathology, Bacteriology, Examination of Blood, Sputum and Urine, Refraction, Wright's Serum, Therapy, Cystoscopy, Operations on Cadaver, Physical Diagnosis, Operations on Animals, Infant Feeding, Electro-Therapeutics, etc., can be arranged for in addition to the general course.

Send for Circular and Catalogue

FRANKLIN H. MARTIN, M.D., Secretary, 2400 Dearborn St., Chicago, Illinois

HOWELL PARK SANITARIUM

FOR TREATMENT OF MILD MENTAL AND NERVOUS DISEASES

WEST END, ATLANTA, GA.

BEAUTIFUL, QUIET, RESTFUL AND HOMELIKE

THIS Howell Park Sanitarium, which is situated in the most attractive suburb of Atlanta, and fronting a most luxurious park.

Special attention is given to such therapeutic agents as: Drugs, Hydrotherapy, Phototherapy, Baths, Electricity, Dietetics, Massage and Rest Cure.

The most authentic references given if desired.

A high-class Sanitarium with the impressions of an Ideal Home are combined.

Booklets are sent on request and correspondence with physicians is solicited. Address

J. CHESTON KING, M.D.,
Medical Director and Proprietor.

TABLE OF CONTENTS—CONTINUED.

OBSTETRICS AND ABDOMINAL SURGERY.

Is Pubiotomy a Justifiable Operation? 199
Late Results after Operation for Benign Diseases of the Stomach and Duodenum 201
A Study of Gastric and Duodenal Ulcers 202
End-Results Following Operation for Benign Diseases of the Stomach and Duodenum 203
Infantile Hypertrophic Stenosis of the Pylorus 203

DERMATOLOGY.

The Effect of the X-Rays on the Secretion and the Secreting Cells of the Anal Gland of the Duck 204
Coal Tar in Chronic Eczema 204
Eczema and Asthma 204
Preparation of Calomel Salicylate, Yellow Oxide of Mercury 204

PEDIATRICS.

Congenital Paloric Spasms and Congenital Hypertrophic Stenosis of the Pylorns in Infancy... 205

EYE, EAR, NOSE AND THROAT.

Case of Hysteria 207

BOOKS—Received 209
—Reviewed 209

Atlanta College of Physicians and Surgeons

(Consolidation in 1898 of the Atlanta Medical and Southern Medical Colleges)

FACULTY

A. W. CALHOUN, M.D., LL.D., President.
WM. PERRIN NICOLSON, M.D.,
J. S. TODD, M.D., Emeritus,
WM. SIMPSON, ELKIN, A.B., M.D., Dean,
W. F. WESTMORELAND, M.D.,
FLOYD WILCOX McRAE, M.D.,
J. CLARENCE JOHNSON, M.D.,
H. F. HARRIS, M.D.,
DUNBAR ROY, M.D.,
JOHN G. EARNEST, M.D.,
JAMES B. BAIRD, M.D.,
WM. S. GOLDSMITH, M.D.,
MARION McHENRY HULL, M.D.,
CYRUS W. STRICKLER, M.D.,
E. BATES BLOCK, M.D.,
J. C. OLMSTEAD, M.D.,
BERNARD WOLFF, M.D.,
MICHAEL HOKE, M.D.,
S. T. BARNETT, A.B., M.D., Registrar,
CHARLES E. BOYNTON, A.B., M.D.,
G. C. MIZELL, M.D.,
F. PHINIZY CALHOUN, A.B., M.D.,
W. B. ARMSTRONG, M.D.,
A. L. FOWLER, M.D.,
A. H. BANCKER, B.L.,
T. C. DAVISON, M.D.

The fifty-fourth annual session of the Atlanta College of Physicians and Surgeons begins Sept. 23, 1908.

With a corps of forty professors and instructors this institution stands second to no medical school in the country, and is an honor to the profession and the State of Georgia. The public will no longer accept the services of an incompetent physician; he must be a man trained in all the branches of the medical science, and such a man can be trained only in a school fully equipped in every department.

The Carnegie Pathological Institute building contains the Pathological, Bacteriological and Histological Laboratories, each equipped with an ample number of microscopes, together with all the modern apparatus and appliances for the cultivation of pathogenic organism. The students are encouraged to do work in this department.

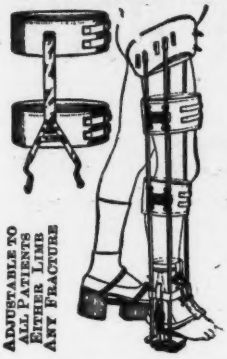
Four years are required, the last of which is devoted largely to clinical and practical work.

Our students have access to the Grady Hospital, the largest in town and immediately across the street, and all the principal hospitals and infirmaries in the city. Our commodious main building is thoroughly equipped throughout. It contains two large reception rooms for patients, two clinical laboratory rooms, ten examination rooms, a modern sterilizing and operating room, a large amphitheatre, four lecture rooms, two class rooms, the chemical, physiological and materia medica laboratories, the museum, the dispensary, a reading-room, a locker-room for the students' hats and coats, the offices of the Dean and Clerk, and private rooms for the various professors. Another feature of the main building is a large gymnasium, recently equipped, in which organized classes will be taught the use and application of exercises for various diseases. For a catalogue, or information concerning the college, address

WILLIAM SIMPSON ELKIN, M.D., Dean,
Atlanta College of Physicians and Surgeons, Atlanta, Ga.

If you are pleased with the Southern Medical Journal and would like to have your friends get acquainted with it, send their names and addresses and we will be pleased to mail them a sample copy. Write plainly and sign your name.

FRACTURES



ADJUSTABLE TO ALL PATIENTS EITHER LIMB ANY FRACTURE

Reduced and Good Bone Union Secured Without Shortening or Deformity with the

AMBULATORY PNEUMATIC SPLINT

Adjustable to any Patient, either limb, for Recumbent and Ambulatory Treatment of Cases of Non-Union; Knee or Hip-Joint Disease; Ankle, Leg, Knee, Thigh and Hip Fracture.

RECOMMEND IT TO YOUR PATIENTS.
Write now, for Booklet, Order Blank, Prices, Etc.

Ambulatory Pneumatic Splint Mfg. Co.

58½ Wabash Ave. CHICAGO

JOHN A. WESENER, M.D., Chemist
W. A. EVANS, M.D., Pathologist
ADOLPH GEHRMANN, M.D., Bacteriologist

COLUMBUS MEDICAL LABORATORY

Suite 1406, 103 State Street, Chicago, Ill.

CUT OUT AND SEND WITH SPECIMENS

..... 190.....

Specimen of .....

Patient .....

History .....

.....

.....

.....

.....

Examination desired .....

.....

Report to ..... *M.D.*

Remittance .....

CHARGE TO MY ACCOUNT .....

FEE TABLE WILL BE SENT ON REQUEST

FOLK-KEELIN PRINTING CO.

NASHVILLE, TENN.

PRINTED AND EMBOSSED STATIONERY FOR PHYSICIANS

THE SOUTHERN MEDICAL JOURNAL is printed in our establishment.

ASK US

For prices on anything you may need in printing and binding. Return mail will bring the answer.

Doctor Morse's Sanitarium

At CHIMNEY ROCK, N. C.

FOR THE MODERN TREATMENT OF

Tuberculosis

Institution is located in the Blue Ridge Mountains of Western North Carolina

BOOKLET ON APPLICATION.

TULANE UNIVERSITY

OF LOUISIANA

Medical Department

Its advantages for practical instructions, both in ample laboratories and abundant hospital materials, are unequaled. Free access is given to the great Charity Hospital with 900 beds and 30,000 patients annually. Special instruction is given daily at the bedside of the sick. Department of Pharmacy also. The next session begins October 1, 1908. For Catalogue and information address

DR. ISADORE DYER, Dean

P. O. Drawer 261 NEW ORLEANS, LA.

BLAKISTON'S NEWEST BOOKS

FOR SALE IN THE SOUTH BY

SNELL BROTHERS COMPANY

NASHVILLE, TENNESSEE

Ask for complete catalog, or information concerning any medical book published. The following list sent postpaid on receipt of price, or to physicians of approved credit on customary terms:—

ALLEN. The Opsonic Method of Treatment. By Dr. Richard W. Allen, A.M., M.B., Pathologist Royal Eye Hospital, London, etc. 8vo., containing 16 charts. Cloth, $1.50.

CASPER. A Text-Book of Genito-Urinary Diseases, Including Functional Sexual Disorders in Man. By Leopold Casper, M.D., Professor in the University of Berlin. Atuhorized Translation, with Annotations and Additions, by Charles W. Bonney, B.L., M.D. With 23 full-page plates, 7 of which are in colors, and 213 other illustrations. Octavo. Cloth, $6; Half Morocco, $7.

DOUGLAS. Surgical Diseases of the Abdomen. With Special Reference to Diagnosis. By Richard Douglas, M.D., late Professor of Gynecology and Abdominal Surgery, Medical Department Vanderbilt University; Ex-President of the Southern Surgical and Gynecological Association, etc. 2d edition, Revised and Rewritten. Illustrated by 20 full-page plates. Octavo; 900 pages. In preparation.

EDGAR. The Practice of Obstetrics. Third Edition. By J. Clifton Edgar, M.D., Professor of Obstetrics and Clinical Midwifery, Medical Department of Cornell University, New York. Third Edition, Rewritten and Revised. With 1279 illustrations, including 5 Colored Plates; 38 Figures in Colors. Octavo; 1071 pages. 17th thousand. Cloth, $6; Sheep or Half Morocco, $7.

GOULD'S "Practitioner's Medical Dictionary." Containing among other new features the Terms of the Basle Anatomical Nomenclature and the Standards of Pharmaceutical Preparations as given by the Eighth Decennial Revision of the U. S. Pharmacopoeia. With 388 illustrations. Octavo; xvi—1043 pages, double-columned. Flexible Morocco, Gilt edges, Rounded Corners, $5; Thumb Indexed, $6.

GREENE. Medical Diagnosis. A Manual for Students and Practitioners. Second Edition. Seven colored plates; 241 other illustrations. 12mo.; xvi—691 pages; full limp leather, gilt edges; round corners, $3.50.

"The work is of the most practical character, the language is clear and concise; there is nothing superfluous."—The Medical Record, New York.

"It is packed with information * * * a book which may be distinctly useful."—The London Lancet.

The Operations of Surgery. By W. H. A. Jacobson, F.R.C.S. (England), Surgeon, Guy's Hospital, etc., and R. P. Rowland's, F. R. C.S., Assistant Surgeon, Guy's Hospital, and Joint Teacher of Operative Surgery in the Medical School. With 777 illustrations. Fifth Edition, Revised and Enlarged. Two volumes. 8vo. 2086 pages. Just ready. Cloth, $12. Half Morocco, $14.

* * * This edition contains 562 pages and 227 illustrations more than the previous edition. It has been thoroughly revised and is in many respects a new book.

JACKSON. Tropical Medicine. With Special Reference to the West Indies, Central America, Hawaii, and the Philippines, including a General Consideration of Tropical Hygiene. By Thomas W. Jackson, M.D., Lecturer on Tropical Medicine, Jefferson Medical College. With two plates and 106 other illustrations. Octavo; vii—536 pages. Cloth, $4.

LOVETT. Lateral Curvature of the Spine, and Round Shoulders. By Robert W. Lovett, M.D. 154 illustrations. Octavo. Cloth, $1.75.

NEXT PAGE

MAYLARD. **Abdominal Pain. Its Causes and Clinical Significance.** By A. Ernest Maylard, M.B., B.S. (London), Surgeon to the Victoria Infirmary, Glasgow. Second Edition. Revised. With four plates in colors, and other illustrations. Octavo; xiv—301 pages. Cloth, $2.50.

Same Author. Abdominal Tuberculosis. Just ready. Cloth, $4.

MORSE. **Post-Operative Treatment.** A Practical Aid to the Logical or Rational Post-Operative Care and Treatment of Surgical Cases. By Nathan Clark Morse, M.B., M.D. Second Edition, Revised and Enlarged. With five plates, one in colors; 175 other illustrations; 8 vo.; 499 pages. Cloth, $4.

"The author gives an epitome of the different methods in use by various surgeons in their treatment of post-operative conditions."

PARKES AND KENWOOD. **Hygiene and Public Health. A Practical Manual.** By Louis C. Parkes, M.D., D.P.H. (London University), and Henry Kenwood, M.B., Professor of Hygiene and Public Health, University College, London, etc. Third Edition. Revised. 96 illustrations. 12mo. 620 pages. Cloth, $3.

REESE. **Medical Jurisprudence and Toxicology.** Seventh Edition. A Text-Book for Medical and Legal Practitioners and Students. By John J. Reese, M.D., formerly Professor of the Principles and Practice of Medical Jurisprudence, including Toxicology, in the University of Pennsylvania. Seventh Edition. Revised and Edited by Henry Leffmann, M.D. 12mo; ix—656 pages. Cloth, $3.

RODMAN. **Diseases of the Breast; with Special Reference to Cancer.** By William L. Rodman, M.D., LL.D., Professor of the Principles of Surgery and of Clinical Surgery in the Medico-Chirurgical College. 69 plates, 12 of which are in colors, and 42 other illustrations. Octavo. Cloth, $4.

STEWART. **A Manual of Surgery.** For Students and Physicians. By Francis T. Stewart, M.D., Professor of Surgery, Philadelphia Polyclinic, 504 Illustrations. 12mo.; ix—778 pages. Full Limp Leather, Gilt Edges, Round Corners, $3.50.

THORNDIKE. **A Manual of Orthopedic Surgery.** By Augustus Thorndike, A.B., M.D. (Harvard). Assistant in Orthopedics, Harvard Medical School. 191 Illustrations. Full Limp Leather. Gilt Edges. Round Corners. $2.50.

TYSON. **The Practice of Medicine.** Fourth Edition. Revised. A text-book for Physicians and Students, with Special Reference to Diagnosis and Treatment. By James Tyson, M.D., Professor of Medicine in the University of Pennsylvania. Fourth Edition, Revised and Enlarged. Colored Plates and 240 other Illustrations, 13 in colors. Octavo, xxvii—1305 pages. Cloth $5.50; Sheep or Half Morocco $6.50.

This edition contains 100 new illustrations and has been increased in size by 65 pages. It includes a special article on Animal Parasites and the Conditions Caused by Them, by Allen J. Smith, M. D., Professor of Pathology, University of Pennsylvania.

VAN HARLINGEN. **Text-Book of Skin Diseases.** By Arthur Van Harlingen, M.D., Dermatologist to the Children's Hospital; Emeritus Professor of Diseases of the Skin in the Philadelphia Polyclinic. Fourth Edition. Revised and Rearranged. With 102 Illustrations. 8 vo; xii—482 pages. Cloth, $3.

WILEY. **Foods and Their Adulterations.** The Origin, Manufacture, and Composition of Food Products. Description of Common Adulterations, Food Standards, and National Food Laws and Regulations. By Harvey W. Wiley, M.D., Chief Chemist, U.S. Department of Agriculture, Washington, D.C. With 11 Colored Plates and 86 other Illustrations. Octavo; 625 pages. Cloth, $4; Half Morocco, $5.

WILCOX **A Manual of Fever Nursing.** By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine at the New York Post-Graduate Medical School. A Text-Book for Nurses, Based upon a Course of Lectures delivered to the Nurses of St. Mark's Hospital, etc. Illustrated. Second Edition. Revised. 12mo. Cloth, $1.

WILCOX **The Treatment of Disease.** A Manual of Practical Medicine. Second Edition just out. Revised and Enlarged. Octavo; xxiv—932 pages. Cloth, $6; Half Morocco, $7.

SNELL BROTHERS COMPANY

529½ Church Street **Nashville, Tennessee**

When in Baltimore

STOP AT THE

130 Rooms Elegantly Furnished

Unexcelled Cuisine

Rooms with Bath and en Suite

HOTEL JOYCE EUROPEAN

Centrally Located Opposite Camden Station Main Depot B. & O. R.R.

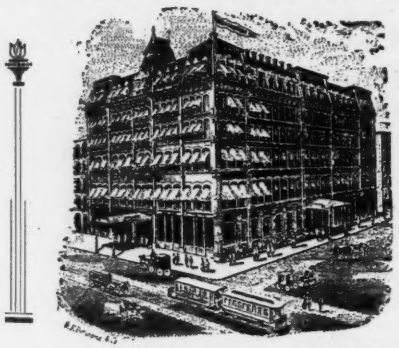
Send for Booklet

Rates $1.00 Per Day and Upwards

HOTEL JOYCE, Baltimore, Md.

The Wellington Hotel

Cor. Wabash Ave. and Jackson Boulevard CHICAGO



Remodeled at a cost of **$150,000. Hot and Cold Running Water and Long Distance 'Phones in all Rooms.** 200 Rooms—100 with Bath. Single or en Suite. Rates, $1.00 and Upwards. One of the most unique Dining Rooms in the country: our famous Indian Cafe. Noted for Service and Cuisine.

McCLINTOCK & BAYFIELD, Props.

MEET ME AT THE COLLEGE INN

Under the Albany, New York's Leading Rathskeller, a place to eat, drink and be merry. Music.

ROBERT P. MURPHY, Proprietor

HOTEL ALBANY

41st Street and Broadway NEW YORK

Remodeled, Handsomely Furnished Throughout

ABSOLUTELY FIREPROOF.

In the heart of the City. **500 Rooms. 300 Bath Rooms.** European Plan. Cuisine Unexcelled. Gentlemen's Cafe, Ladies' Restaurant, and Moorish Rooms. Popular Prices. Plenty of life—but Home-like. Send for Booklet.

$1.00 PER DAY AND UP.

Are You Going to St. Louis?

The Windermere Hotel

Is a delightful place in **BEST RESIDENT SECTION** and away from the noise and smoke, yet within easy access. **Transient Rates, $1.00 to $3.00 Per Day. Special Rates by the Week.**

WRITE FOR BOOKLET. Address **W. F. WILLIAMSON, Mgr.**

THE SOUTHERN MEDICAL JOURNAL

SNELL BROTHERS COMPANY, Publishers, No. 529½ Church Street, NASHVILLE, TENN.

EDITORIAL STAFF:

J. A. WITHERSPOON, M.D. ---------- *Editor in Chief*

W. A. BRYAN, M.D.
J. M. KING, M.D. ---------- *Managing Editors*

DUNCAN EVE, M.D.	W. D. HAGGARD, M.D.
S. S. CROCKETT, M.D.	G. C. SAVAGE, M.D.
A. B. COOKE, M.D.	L. E. BURCH; M.D.
WM. LITTERER, M.D.	HILLIARD WOOD, M.D.
S. M. BLOOMSTEIN, M.D.	GEO. H. PRICE, M.D.
J. P. KELLER, M.D.	PERRY BROMBERG, M.D.
M. M. CULLOM, M.D.	GEO. C. TRAWICK, M.D.

Assisted by forty collaborators and about one hundred regular contributors among the leading physicians of the twelve Southern States.

Each number contains one hundred pages of well-illustrated reading matter and advertisements.

No "hobby" or "scheme" of any individual school or locality is promoted, and no advertisements of questionable character appear in it. The sole purpose and aim of all connected with the Journal is to advance the interests of the entire Southern medical profession.

THE REGULATION OF MANUSCRIPTS:

All manuscripts must be type-written on one side of the paper only.

Each issue of the Journal will be copyrighted.

All manuscripts submitted to this Journal will be considered only on the condition that they will not appear in any other journal until after they have been published in this Journal.

It is desired that all articles close with a summary and that the bibliography be given.

Good illustrations are desired; the authors to furnish satisfactory photographs and drawings.

All manuscripts must be in the hands of the editors by the tenth of the month preceding the date of issue in which they are to appear.

All manuscripts must be passed on by the Department Editors, and final action taken by the staff in open session.

The return of manuscripts, photographs and drawings, used or not used, will not be guaranteed, but reasonable care will be taken of them, and when requested will be returned.

All manuscripts and communications should be addressed to the SOUTHERN MEDICAL JOURNAL, No. 529½ Church Street, Nashville, Tenn.

REPRINTS:

Reprints of Articles will be supplied f.o.b. Nashville, at the following rates:

100 copies, 75 cents per page.
200 copies, $1.00 per page.
500 copies, $1.50 per page.
1,000 copies, $2.00 per page.

For each additional thousand copies, add $1.50 per page.

Covers are counted as two pages.

Requests for reprints should be made on manuscripts, but can be secured up to the time the form is printed. State if covers are desired.

FRONTISPIECE:

An extra number of all frontispieces appearing in this Journal are preserved, and copies may be had mounted suitable for framing at 25 cents each, or six for $1.00, carefully wrapped, postpaid.

COMMENTS

I have your circular announcing the launching of a "Southern Medical Journal," and, honestly, I have so often felt the need of just such a journal. I was delighted to receive your communication. Will gladly patronize it.

L. D. COTTEN, M.D.

Sparta, Tenn.

Through the columns of the daily press I see that you aggressive Nashville fraters are launching the "Southern Medical Journal." I most heartily greet the advent of just such a publication, and congratulate you. For some time I have felt the need of a medium of this character in order that our Southern brethren may be in closer touch. Please have my name placed upon your subscription list.

EDGAR DUFF BURNETT, A.M., M.D.

Louisville, Ky.

One needs but to refer to the editorial staff to feel assured that your journal will rank among the best published. The work of such representative men will be eagerly sought for and appreciated by the medical profession throughout the South, and I know will co-operate in making it the success it deserves.

B. D. SIBLEY, M.D.

Birmingham, Ala.

Thank you very much for the copy of your journal. It certainly puts up a very good appearance, and, it occurs to me, that we should have it on our list of subscriptions. Enclosed please find $2 for one year's subscription.

Sincerely yours,

C. H. MAYO, M.D.

Rochester, Minn.

I have your letter of recent date, asking my opinion of the "Southern Medical Journal." In reply, I will say that I subscribed for the journal simply because a friend asked me to, and gave the matter little thought so far as the real value of the journal is concerned. I tell you frankly, however, that since receiving the first copy I find that I am already a friend to the journal, and I see no reason why it should not prove a perfect success. I cheerfully recommend this journal to other physicians who wish to read good "stuff," written by men whom we know to be of the right material. Wishing you much success, I remain,

Yours very truly,

M. A. COPELAND, M.D.,

Birmingham, Ala.

Replying to yours of recent date in regard to the "Southern Medical Journal," I will say that it certainly fulfills the promises made by the promoters in putting it before the profession, and, if it continues in the way it is started, taking full advantage of its natural growth, the future holds great things in store. It is bound to be a strong factor in shaping medical thought throughout the South, developing better medical writers and putting the essentially Southern phases of disease better before the world. It has a wonderful field from which to select, and one that has only been partially covered in the past by State and independent journals.

F. B. YOUNG, M.D.

Springfield, Ark.

The first two issues of the "Southern Medical Journal" have been carefully read by me, and it is simple conformity to the logic of the situation that bids me congratulate you on your product. As a distinctly Southern creation it stands without a rival. I am pleased with every department, and feel that you are to be especially commended for excluding every form of patent medicine, and other forms of fraudulent advertising.

I confidently believe that in less then three years your journal will enjoy a greater degree of popularity in the South than any other medical publication.

Most sincerely yours,

W. W. CRAWFORD, M.D.

Hattiesburg, Miss.

As I am a collaborator of and contributor to the "Southern Medical Journal," I do not think it would become me to express my commendation.

I think, however, that the editors deserve the greatest credit, and I feel proud of my company. Also, it may interest you, as publishers, that I have received letters and inquiries regarding my articles on malaria from Florida, Mobile, Texas, remote points in Arkansas, Mississippi, Alabama and Louisiana. In fact, judging from letters received, these articles have been more widely read than anything I have ever produced.

WILLIAM KRAUSS, M.D.

Memphis, Tenn.

The South has needed for years a journal just exactly what the "Southern Medical Journal" now represents. We are to be congratulated.

Yours very truly,

F. P. CALHOUN, M.D.

Atlanta, Ga.

The quality and usefulness of any medical journal is dependent upon the quality of the men behind it; hence, when I take into consideration the geographical diversity and personelle of both the editorial staff and collaborators of this valuable exponent, many of whom I know personally, I am at once convinced of the fact that SUCCESS surely belongs to it, and that MANY GOOD THINGS are in store for those who peruse its pages. Therefore, I most heartily recommend it to my confreres, and urge that those who are not already subscribers to it become so at their earliest possible date.

S. LEWIS KNIGHT, M.D.

Hattiesburg, Miss.

The "Southern Medical Journal" is filling a place in Southern medical literature that has long been vacant. The excellence of its articles and the care with which it is published should obtain for it a high rank among the medical journals of the world.

Yours turly,

J. SHELTON HORSLEY, M.D.

Richmond, Va.

T. E. Schumpert

SOUTHERN MEDICAL JOURNAL
PUBLISHED MONTHLY

VOLUME I NASHVILLE, TENN., SEPTEMBER, 1908 NUMBER 3

WHAT WE SHOULD KNOW ABOUT MALARIAL DISEASE.

BY WILLIAM FRAUSS, M.D.

Professor of Pathology and Tropical Medicine, College of Physicians and Surgeons, Memphis, Tenn.

MALARIAL HEMOGLOBINURIA.

Synonyms—Swamp Fever, Malarial Hematuria, Hemoglobinuric Fever, Hemorrhagic Pernicious Malaria, Bilious Hemoglobinuric Fever, Bloody Chills, Yellow Chills, Blackwater Fever, etc.

Definition—Marlarial hemoglobinuria is a syndrome appearing suddenly in persons harboring malarial infection for a protracted period, and characterized by a very severe chill, followed by red urine (from claret to pokeberry-juice color), fever, great prostration, nausea, vomiting, and very marked jaundice.

Hemolysis and hemoglobinuria associated with malaria has a pathology in some respects quite unique and not shared by other forms of malarial disease, nor by other conditions associated with hemolysis. Although we have in pernicious and chronic malaria some evidence of the presence of a soluble toxin, such as necrosis of red blood corpuscles, parenchymatous and fatty degenerations, focal necroses and multiple thromboses, we find in malarial hemoglobinuria all these phenomena markedly accentuated. The intense vomiting, biliousness, albuminuria and jaundice, are paralleled only in the second stage of yellow fever. Whereas, pernicious malaria manifests itself in many forms, according to which organ or set of organs is the seat of segmentation emboli, we are dealing with such conditions in hemoglobinuria, if they occur, only as complications. Here the vascular obstruction is inflammatory (thrombotic), blood destruction is in excess of the action of live plasmodia, which indeed soon disappear, and the entire symptom-complex is such as could not possibly be produced by the mere development of plasmodia, within red blood cells.

If malarial hemoglobinuria were nothing but acute pernicious fever, it could not strike persons weeks after return from the tropics, even to England, where malaria is not endemic. This disease is never a primary event. We have as a constant antecedent a prolonged harboring of malaria parasites in the blood or viscera, even though there be no evident symptoms. We rarely find it in persons with extremely large spleens, those whose blood and viscera are almost or entirely free of plasmodia; yet new-comers, who are such a ready prey to pernicious fevers, are absolutely immune to it. The relation to present infection will be alluded to later on. As to incidence with reference to term of residence, Brem reports one mild case within two months with a

history of gross neglect. Plehn's 97 cases average three years, the earliest in three months (gross neglect emphasized). Daniels had four in the first six months out of 114 first attacks, and this is the experience of every observer. In regions where one season's sieges can be recovered from before the ravages of the next year begin, the disease is quite rare, or confined to imported cases. In yellow fever the greatest visceral intoxication, with degenerations, occurs only after the blood has ceased to be transmissible by mosquitos. In all diseases such pathologic phenomena appear late, when the intracellular poisons of the parasites must have been set free.

Let us see how malaria is acquired. The sporozoite, injected by the mosquito, is a worm-like body, having active vermicular motility, and can be seen to deliberately pierce a blood cell, enter, and develop into a schizont. The resulting embryos are spherical bodies having only brownian motility, and appear actuated by chemotaxis. They bound about, bump against blood cells, adhere to one, break loose again, become attached to others and finally sink through the rim of the corpuscle, completing their cycle to segmentation, exactly as the sporozoite has done. If all were to enter cells, the succeeding paroxysm would be 6 to 30-fold the severity of the first. Beginning with the breaking-up of the advance guard of a brood, and continuing for some hours after the last ones have segmented, the febrile paroxysm takes place. Assuming the plasma to be indifferent to the insoluble, non-functionating merozoites, the fever must be due to something else. It is not due to the growth of the nutritive bodies within the cells, because most of this takes place during the afebrile stage. There is much evidence to show that the residue of segmentation contains a plasma-soluble poison which causes the chill, fever and sweat. I believe, reasoning by analogy only, that this is a specific poison and is needed to sensitize red cells for invasion by the young merozoites. It is the opsonin needed by these spherical, non-motile, embryonic bodies to attract and attach them to the cell to be entered, not required by the sporozoites, who attack with their own weapons. In the normal scheme of defense we have phagocytosis, which can be seen in fresh malaria blood, probably also unsensitized corpuscles. Gradually, however, the individual acquires a resistance in addition to this. With repeated attacks the body depends more and more upon this developed new-formed resistance, and a condition of "latency" is established. New-comers are known not to have this resistance or defense of "latency;" every segmentation is followed by a paroxysm of fever; whereas, with old residents, this latency is quite the usual feature; an intercurrent factor, such as taking cold, a surgical operation, exposure, bad water, unhygienic living, eating watermelons, etc., usually brings on a chill quite suddenly and so coincidentally that old practitioners still find in it ground for rejecting the "mosquito theory."

Coming back to the biologic function of the parasite, the nutritive schizont within the cell grows at the expense of the hemoglobin, i. e., it now has a hemolytic function, which ceases and becomes latent again after segmentation, to become active only when the merozoite has entered a cell. It is hemolytic only in the growing stage when it lies safely within the corpuscle, and *when the patient is having no symptoms.* Golgi, working with unstained blood, taught, quite correctly, that quinine acted by preventing the invasion of red cells, but he was wrong in saying it killed the "spores." By the aid of modern staining methods we can observe in heavily cinchonized patients, filamentation, karyolysis and fragmentation of cytoplasm of the growing plasmodia, it arrests their development. If a cell containing such a parasite breaks up, unused endoplasmodial hemolysin is set free and, with the aid of the sensitizer, if unopposed by antibodies, it may lake cells *from without.* As a consequence, the spleen, through the portal

vein, furnishes the liver with excess of hemoglobin, cadavers of cells and plasmodia, free poisons, etc., so that the hepatic cells are overworked and poisoned, and the patient becomes very "bilious." Sensitin and hemolysin* accumulate, adding to the hemoglobinemia, and the patient is "full of malaria." This is really latent hemoglobinuria. Any quinine now administered, by arresting the development of nutritive bodies and damaging (vide infra, Diessing's reaction) the infected cells, adds to the sum of free hemolytic elements, establishes a vicious circle and causes the explosion of a hemolytic paroxysm—active fulminant, instead of latent; there is, according to Koch "weiter nichts als eine Chinin Intoxikation," but a second dose, many times as large, if it happen not to meet nearly mature broods, appears to cure the patient. As Plehn points out, it would be absurd to say a minimal dose (¼ grain) would nearly kill a patient, when a subsequent manifold larger one has no such effect. As will be seen below, quinine is not necessarily nor exclusively the occasion for a hemolytic paroxysm.

It is not necessary to go into hair-splitting distinctions as to the character of hypothetical bodies, but certain hemolytic experiments made justify the belief that the soluble residue of segmentation is a specific opsonin having cytophilic affinities for red cells and that the endoplasmodial elements carry toxophore groups having hemolytic properties. Experiments with other hemolytic agents show that antibodies can be developed for either group, i. e., anti-amboceptors and anti-complements. The assumption that any auto-hemolytic function comes into play seems to me to be untenable, it being unparalleled in any scheme of defense.

So long, then, as the malaria remains more or less paroxysmal, and, possibly with the aid of the mechanism expressed as fever paroxysms, intervals occur during which these toxic substances may be eliminated and in part neutralized, and hemolysis with hemoglobinuria does not take place. The chance of their accumulating to the danger point is also minimized if the subject spends part of the year in a more salubrious region or has the protection of seasonal intermissions. This is just the difference in incidence and distribution between cyclic or paroxysmal malaria and blackwater fever. It accords with what was said in reference to incidence in the beginning of this article. The practice of only taking calomel for the "biliousness" merely postpones the evil day. Worse still is the practice of desultory, ill-timed or insufficient quinine taking, which throws all the work on this immunizing mechanism, the spleen and liver enlarge, the patient becomes sallow, has a coated tongue, and his blood, at least from the spleen, contains parasites, especially "female" ones, and, under the augmentation of reinfections, there is gradually developed an unstable defense, a "toxin fever" drives the patient to quinine or a patent chill tonic at a time when growing parasites are readily disturbed within necrobiotic cells, and—he has a chill, followed by "hematuria." Sometimes an intercurrent factor, or a fresh infection, is the occasion of the paroxysm, but in any case the quinine, the fresh infection, or the indifferent predisposing cause is only the *occasion* of the hemoglobinuric paroxysm and *not* the *specific cause*. The latter is always the "specific alteration of the blood," as Bignami expresses it in his vague hypothesis.

It has been taught, ever since the days of Binz, that quinine directly poisons the parasitic organism, since very weak solutions of it arrest ameboid movements of certain unicellular organisms. V. Diessing has ascertained that quinine only enters into a plasma-soluble combination (compound) with hemoglobin, which the parasites cannot metabolize and that they are thus starved. This harmonizes the old and new views and also explains why crescents are immune to quinine. This property of quinine undoubtedly plays a part in the

*arbitrary names.

cases called "quinine hemoglobinuria." It is erroneous to consider this as a separate and distinct disease because the two forms merge imperceptibly, and the quinine element is one of degree only. So far as I know, quinine hemolysis apart from prolonged malarial infection is unknown.

There is too much evidence in favor of quinine being, in the vast majority of cases, the "occasion" of the attack for any discussions to continue on this subject. For bibliography I refer to Deaderick, in the *Memphis Medical Monthly*, Dec., '07, *et seq.* The main thing I desire to make clear is that blackwater fever is produced by the disturbance of an unstable immunizing balance, that its primary effect on the infection is to minimize, if not abolish it, and that quinine, being a possible and most frequent provocator of it, should not be used or its use suspended until it can be ascertained if parasites persist or reactions to it no longer occur.

The rule that quinine therapy would be justified only when parasites are present is consequently not tenable. The presence of plasmodia is the very evidence of danger, although it may happen that in a given case there be no further reaction. I recall a case where the blood showed a very rich infection on the third day, after the urine had cleared up. This is just the condition in which even Plehn advises the exhibition of quinine. The attendant refused to give it and the expected fever paroxysm did not occur. What became of the plasmodia? I have myself had 28 cases recover who *never received another dose of quinine* after the first bloody urine. Is this pernicious malaria? Surely not. Some of these patients were extremely ill. Bearing upon this point, Stephens has grouped 219 cases with reference to the proportion having parasites at different stages. Those examined on the day before the attack showed 95.6 per cent. infected. Those examined on the day of the attack showed 61.9 per cent. with parasites, and of those examined on the day after the onset only 17.1 per cent. had plasmodia. This, and the differential leucocyte count shows that the disease is really malaria and that the blood rapidly becomes sterile. Again, Plehn has grouped, nearly equally, over 700 cases with reference to treatment. Those treated without quinine gave a mortality of about 15 per cent., as against over 17 per cent. for the quinine-treated cases.

A practical clinical division of varieties of malarial hemoglobinuria is the following: 1. Hemolytic pernicious fever; 2. hemolytic malarial cachexia; 3. malarial quinine hemolysis.

The first includes the cases occurring at the height of the season (where seasonal prevalence changes). As the re-infections are more common at this time, a larger percentage of this class of cases may have to be cinchonized, but not until after thorough purgation. The hemolytic paroxysm removes the element of urgency as to quinine. Those who die of "malaria" die in the first 24 hours, and are helpless under any system of treatment. The cases of this first class have the highest fever and the hemolytic reaction generally fails to completely kill off the plasmodia.

The cases of the second class come late, sometimes months after the wards have become emptied of the regular fever rush, are often spontaneous ("taking cold"), and are always to be treated without quinine until convalescence is well established. They have a lower temperature range unless renal symptoms are responsible for the fever.

The third class undoubtedly encompasses more complex factors. Although it plays a part in most cases because the "malaria in the system" has been the occasion for tinkering with quinine, it often persists as what appears to be a true post-malarial phenomenon. Generally the severity of the paroxysm is in definite proportion to the size of the dose. (Tomaselli's disease). It seems paradoxical that a drug can protect the corpuscles against invasion by live plasmodia, but not against the labile hemolysin, but we must re-

member that it is disturbing an immunizing process, introducing factors not readily solvable. We are less concerned with this phase of the subject than we are with the fact that the phenomena occur and have to be dealt with. The treatment is gradual immunization with small doses.

Skipping symptomatology, morbid anatomy and diagnosis for lack of space, we come to treatment. It can be seen by Plehn's statistics that in the hands of an experienced man the difference between the pro or con attiude as to quinine is small. If we had a simple and reliable test for the hemolytic reaction in a given case, quinine might turn the scale in a few cases. There is also some empyrical evidence in favor of the intramuscular method as against the internal administration. Considering that in this way it is more gradually absorbed and reaches the splanchnic circulation far more indirectly, there may be something in it. So long, however, as we have nothing but percentage data, we must still to some extent adhere to some rule-of-thumb. I believe the best rule is Plehn's: If before the hemoglobinuria there is a reaction to quinine by increased fever with progressive diminution of hemoglobin, its use should be suspended until other measures have been instituted. After hemoglobinuria has developed, quinine is suspended and tentatively resumed on the third day if a blood examination shows parasites to be then present. If, after the resumption of quinine, the urine becomes dark again, it must be stopped at once and later still more cautiously resumed. As soon as it induces no further reactions the blood is slowly but very completely saturated. This should be the routine during convalescence in all cases. If a case of the third class proves to have developed, arsenic is given and the quinine injected in very small doses at long intervals, or the patient sent to another climate. Reinfection must be carefully guarded against.

The Chloroform Treatment—This was introduced by Quennec in 1899. He reports 56 cases treated successfully by keeping the patient in a state of mild drunkenness with small doses of syrup of chloroform, frequently repeated. He claims for it that it renders quinine administration harmless, diminishes albuminuria, stops vomiting, produces diaphoresis and diuresis, establishes vaso-motor balance, and tranquilizes the patient. I have had nauseated patients object bitterly to its use; theoretically, it would seem to be contraindicated in the presence of much visceral degeneration.

The plan of management should be about as follows: During the chill (or rather rigor) administer chloroform emulsion; apply hot sinapisms to extremities, an icebag to the head and give pilocarpin, which is also sedative and usually finds its only chance at this stage. Several large doses of calomel without soda are given an hour apart, followed by sodium thiosulfate in hot water, until the black, tarry stools become fluid and yellow. If there is much vomiting, give hot drinks, which also tend to wash the stomach. If this fails, caffein, iodin, carbolic acid, cocaine or iced carbonated drinks should be tried. Avoid morphine, especially if there is much albuminuria or oliguria. If the purgatives are retained, the stomach is soon quieted. If the thiosulfate cannot be given, calomel, which is never completely vomited out, must be continued, but it is not necessary to resort to medieval barbarism in this respect. After this elimination of water through the stomach, bowels and skin, an effort must be made to replenish the body fluids through the same channels in the order named. A continuous hot saline colon irrigation (I use a catheter and a glass throttle to insure a slow current), with the patient on a pad and the bag scarcely above the level of the head, is the second routine step—at the end of the purgation, of course. Diuretics, turpentine, digitalis, morphine, ergot, quinine, and antipyretics are not to be used. Indeed, the medicinal treatment at this time is almost entirely symptomatic and expectant, and con-

fined to the rectal or sub-cutaneous route. One cannot play heroics with degenerated organs, nor give cardiac stimulants to or greatly disturb the patient whose organs are full of thrombi; all active treatment is confined to the initial stage. These are routine directions, of course, and not iron-clad. The body surface must be covered and protected from air currents, even in hot weather, to prevent renal chills.

Uremia is a late symptom, and often wanting, even after days of anuria, because the kidney degeneration is acute and urotoxic elements have little chance to accumulate under active purgation. The anuria usually comes on suddenly, with hiccough. Nitrites, hot packs and hot colon flushes are used. Such barbarous measures as blisters, wet cups, leeches and moxa are still recommended! They are worse than useless. As the blood pressure rises and twitchings appear, apomorphine in minute, oft-repeated doses has served me well.

During convalescence arsenic and systemic tonics are needed, and, I repeat, the patient must be protected from reinfection, and, if at all possible, gradually but thoroughly saturated with quinine. If this cannot be done, he must be sent to non-malarious territory.

To those who insist on treating malarial hemoglobinuria with quinine, I have to give this parting warning: Give it intramuscularly and stop it if the fever rises or chills recur during its use. There is no malaria parasite which causes chills at intervals of a few hours or without some regularity, and there are no chills *during* remittent malaria—these are *not* malarial paroxysms, they are caused by the discharge of immature parasites into the plasmal. *Quinine positively aggravates such a condition.* Experienced "swamp doctors" give quinine during the height of a malarial fever only under conditions of extreme necessity, and never without misgivings.

THE PRESENT STATUS OF THE TREATMENT OF EXOPTHALMIC GOITER.

BY JOHN R. WATHEN, A.B., M.D.,

Professor of the Principles and Practice of Surgery and Clinical Surgery, University of Louisville, Louisville, Kentucky.

It is a fact that Graves, as early as 1835, and Basedow, a little later, called attention to the disease generally known as exopthalmic goiter, but it is nevertheless true that but little of real value had been evolved until comparatively recent times. A more careful study of the thyroid gland by modern methods of research has brought out many facts which have a direct bearing of the proper treatment of this complex disease.

At present there exists much diversity of opinion as to the etiology and the physiology of this condition, and the only points we seem to have come to at least a partial, if not universal agreement upon, are the symptoms, the pathology, the diagnosis and the treatment; and fortunately these latter are the most important from the standpoint of the patient, the physician and the surgeon.

Exopthalmic goiter is a condition now recognized as a result of hyperthyroidism—increased pathological activity of the gland. Those symptoms which point to the early diagnosis are usually tachycardia, muscular tremors, a gastro-intestinal disturbance and general nervousness. Often excessive perspiration and occasionally a rise of temperature have been noted. The exopthalmos and the enlargement of the thyroid gland are later manifestations of the disease.

Theodore Kocher claims never to have seen a true case of Graves' disease without an enlargement of the thyroid. Beebe, who has been working upon a serum for the treatment of exopthalmic goiter, says that there are two possibilities which explain the origin of the hyperactivity of the gland; the first as a result of nervous shock; and the second as a compensatory hypertrophy during a toxemia.

We all know from recent investigations that there is certainly a remarkable control exercised by the nervous system on glandular activity.

Beebe has further observed: "As to the second hypothesis, there are some histologic studies which indicate that during the infections and also during chronic toxemias the thyroid undergoes cellular hypertrophy, i. e., the additional demand for the detoxicating action of the gland results in its growth."

MacCallam, of Johns Hopkins, who has done much excellent work upon the pathology of exophthalmic goiter, says that: "Even yet there is not a perfect unanimity of opinion as to the anatomic changes which underlie these symptoms. Nearly all writers, except certain clinicians, who have not made anatomic investigations, agree that there are always changes in the thyroid, although there has been much debate as to whether these changes are constant in character or not." He further has said:

"At operation, the superficial veins are found to be very large and easily torn, and are distended with blood, so that the gland has a very congested appearance. This is not striking in the excised portion, since the vessels collapse, and on section the interior of the gland tissue is rather pale. Usually the tissue is hard, and rather rigid than elastic. Its nor-

mal amber red translucence gives way to a grayish opacity, and the fresh-cut surface instead of being glairy or gelatinous in appearance, tends to be rather dry and granular."

The histological study of this gland when Graves' disease is present, has been most carefully made by Albert Kocher after an experience of over 300 cases, the largest number reported by any surgeon. He says:

"These changes are: Irregularity in the arrangement of the aveoli (acini); localized changes in the epithelium; the formation of papillæ; increase in size, particularly in the height of the epithelial cells, which are paler in the central portion and darker in the periphreal part, where the large vascular nucleus is situated. The colloid material in the areas, when the epithelial cells are high, is retracted and granular; where there is circular hypertrophy of the cells, the colloid material is flaky and is often found only at the center. In the smaller aveoli the cells are also high and do not contain viscid, tangible colloid material. Interstitial and intra-aveolar lymphocyte infiltration, with desquamation resembling germ centers are quite extensive, or only sparingly present."

Concerning the examination of the blood in exophthalmic cases, the Kochers have observed that there has been a marked increase of lymphocytes and a diminution of polymorpho-nuclears. The leucocyte count itself was normal, the increase of lymphocytes being in proportion to the degree of the disease. Nothing was as yet known as the cause of the lymphocytosis. It was different from that which accompanied pus formation. It explained the danger of the very slightest infection in these cases.

Based upon our modern conception of the physiology and pathology of this disease, what then should be our treatment?

While in the treatment of exopthalmic goiter, the general, medicinal, dietetic, serum therapy and radiotherapy measures have yielded in some few selected cases brilliant, but usually temporary results, on the whole they have been very disappointing, and the real and permanent cures have only resulted from surgical methods. Of course, this does not apply to those physiological types of thyroid enlargement so often found in young women around puberty, but to the real new growths like tumors, which show upon microscopic section a very different histo-pathology from the normal gland slightly hypertrophied. These types usually yield to iodine and electricity, or even disappear spontaneously without any treatment after a reasonable time.

Even those cases of true Graves' disease where the exophthalmos is little and the pulse under 100, operation should not be recommended, but a careful diet and hygiene, with the hopes of seeing an improvement. There are no drugs which have any direct effect upon the gland in Graves' disease, but the symptoms can be treated with some benefit.

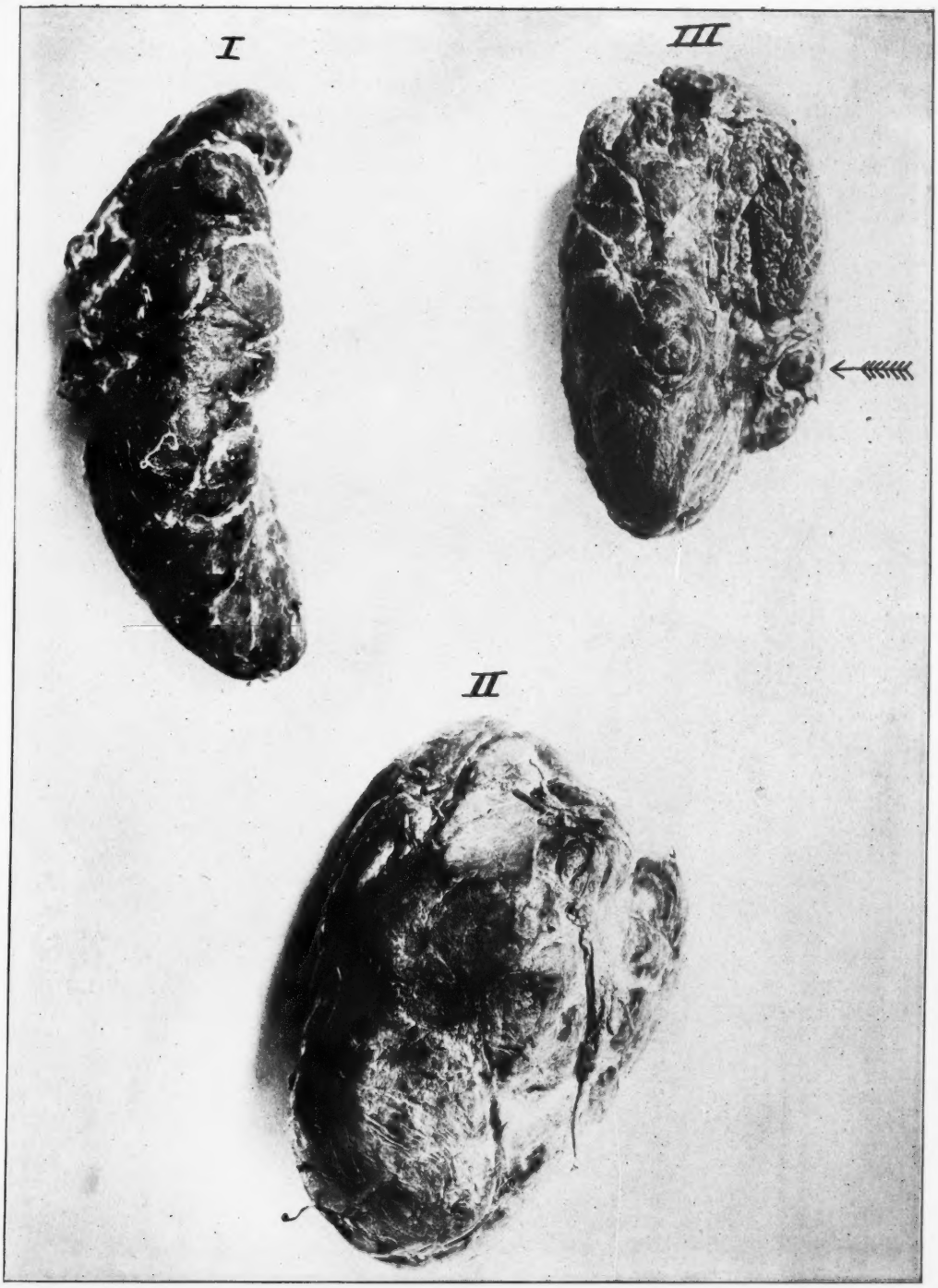
It is to be hoped that Beebe's serum will some day be perfected and produce more positive results, but at present it is difficult to prepare, and by no means uniform.

Halstead has well said that we may hope for future serum therapy, but until it is firmly established, we are compelled to use the only sure means of cure by surgery.

Albert Kocher has written: "To say that surgical treatment is still the best, is not enough; it has proved itself superior to any other form of treatment. It attacks the organ which is instrumental in producing the toxicosis, namely, the thyroid gland."

The Kochers have operated over 300 times for exophthalmia, with a total mortality of 3.5 per cent., and in the last 91 operations they had not a single death. The Mayos have reported 110 operations for Graves' disease with 9 deaths, and in the last 64 of this number, only 2 deaths. Halstead, Crile and others have had equally good results.

With a perfected technique, due largely to the improvements in surgical progress and a more careful study of this gland, we should



EXOPHTHALMIC GOITERS. (ACTUAL SIZE.)

SPECIMEN I.—Weight 1¾ oz., removed from boy, age 14. Right Lobe. SPECIMEN II.—Weight 4½ oz., removed from girl, age 19. Right Lobe. SPECIMEN III.—Weight 2 oz., removed from girl, age 18. Right Lobe.

(In Specimen III arrow points to a parathyroid gland embedded in the substance of the thyroid.)

now be able to operate with this greatly reduced mortality.

It is not the purpose of this paper to describe in detail the operation employed in removal of goiters, but only to call attention to some points in the modern technique, which have attracted much attention of late, and lead us to more careful consideration of our methods of attacking the thyroid gland. It is a well-established fact that young adults whose entire thyroid has been removed, retrograde in intelligence, and older individuals may develop a myxedema. It has further been noted that the complete removal, injury or cutting off of the blood supply to the parathyroids, when operating upon a goiter, frequently results in tetany, a condition characterized by painful tonic and symmetric spasm of the muscles of the extremities.

The parathyroids are four small glands resembling the suprarenals, and are situated on either side, posterior and attached to the capsule which covers the goiter.

The two lower glands are in close relation to the inferior thyroid artery, and the upper close to the superior; therefore care should be exercised in ligating these vessels so as not to injure the parathyroids, or to entirely cut off their blood supply. Halstead, Berkley, Pool and others have demonstrated lately from very elaborate dissections that the main blood supply to the parathyroids is from a separate branch or branches from the inferior thyroid artery.

Albert Kocher has said: "The operation of Billroth differed from that of Kocher, in that Billroth removed the capsule with the thyroid, whereas Kocher peeled out the thyroid gland from the capsule and left the capsule. This resulted in a diminution of hemorrhage and in preventing injury to the parathyroid glands.

In Vienna, 16 per cent. of the cases operated upon had tetany, while in Berne, only 4 in 1,000. The exophthalmic type of goiter has a very vascular capsule and great care is needed to completely control the hemorrhage.

Following operations of exophthalmic goiters the drainage should be free as with a septic wound.

In the hands of experienced operators, who have carefully observed the many new facts which have been brought to the notice of the surgical world, the mortality of exophthalmic goiter in properly selected and prepared cases should compare favorably with other operations.

REFERENCES.

S. P. Beebe: "The Physiology of the Thyroid Gland in Its Relation to Exophthalmic Goiter." *The Jour. Amer. Med. Ass'n.*, Oct. 5, 1907.

W. G. MacCallum: "The Pathology of Exophthalmic Goiter." *The Jour. Amer. Med. Assn.*, Oct. 5, 1907.

W. S. Halstead and H. M. Evans: "The Parathyroid Glandules." *Annals of Surg.*, Oct., 1907.

E. H. Pool: "Tetany Parathyreopriva." *Annals of Surgery*, Oct., 1907.

Albert Kocher: Keen's Surgery, Vol. III., 1908.

DIAGNOSIS OF SARCOMA.

W. A. BRYAN, A.M., M.D., NASHVILLE, TENN.

In studying sarcomata there are so many difficulties confronting us that a certain amount of despair must come to any one desiring to give the results of accurate scientific work. The cause of malignant tumors is as unknown today as it ever was; the diagnosis is often impossible clinically, and at least at times questionable microscopically, unless in the hands of the most expert; while the results of treatment is most appalling to him who has had most experience in a practical way and had so many disheartening reports of recurrence after every known effort had been conscientiously made at eradication. So true is this that certainly of a given number of sarcomata one must recognize that, so far as present knowledge goes, an irrevocable death sentence has been passed on the majority. Our knowledge of malignant tumors is so meager that even the classification is hazy, overwhelming and delusive as the vast literature on the subject is. Some one has said that it is no wonder we fail to see clearly, since we have raised so much dust in our effort to find cause and treatment.

The phase of the discussion of sarcoma undertaken in this article is the easiest and yet, if we admit our ignorance of the cause and accept our present therapy, it is certainly the most important. The solution of causes must come from the laboratory; meantime the clinician and the surgeon must continue to give the greatest relief to the unfortunate hosts of this dire affliction along the lines experience has marked out.

It is the purpose of this paper first to call attention to the diagnosis of sarcoma by the usual signs and symptoms, and to emphasize the necessity of knowing these symptoms and signs so well that a conclusion is to be reached at the earliest possible moment. Here, contrary to the action of legal courts where there is presumption that the defendant is innocent until proved otherwise, the clinician, in case of the least question, even in case there is a tumor present, should presume that the tumor is not innocent until proved most positively to be, and the most active search for that evidence should be made instantly. Second, to differentiate sarcomata as well as may be done, from simulating benign tumors. Third, to impress that the benign tumor today may at any time in the future assume malignant characteristics and to accept the teaching of the microscope that there are many tumors,which though from present clinical showings, they seem benign, are in reality malignant. Fourth, to show the sites and ages at which sarcomata develop with greatest frequency. Fifth, to show the type of sarcoma that is most likely to affect certain organs, for the value it may have upon prognosis and treatment.

Signs and Symptoms Generally Applicable in the Diagnosis of Sarcoma.—Encapsulation and consequent mobility. That a sarcoma may be encapsulated so completely as to be easily movable is a matter of general teaching, and yet the very fact that such tumor is movable in the structure from which it originates or the tissues surrounding it can be easily glided over it, should never be accepted as a pathognomonic evidence of benignity. Certainly mobility is a differential sign between benign and malignant tumors, and it is so frequently reliable that the very possibility of an exception becomes a danger, capable of causing delay of operation beyond the hope of cure. The fact that a benign tumor may undergo

malignant change, or, as some prefer to put it, that a malignant tumor may for a large numbers of years appear benign and suddenly break out into stormy violence is enough to cause the diagnostician to hesitate long to assure his patient that because of its mobility the tumor is and will remain, even probably benign. The pseudo-capsule of incipient sarcoma forms, it is claimed, precisely as in benign tumors, and although certain of the insane or malignant cells are demonstrable in sections made from the capsule and in the surrounding tissues, this transgression of the boundary that marks the limit of benign tumors is as yet inconsequent; the attachment between the intracapsular cells and the infiltrating extracaopsular cells is not established, hence no macroscopical clue can be had that such is the case. The time when sarcomata are still movable is the ideal time for operation, and if a movable tumor cannot be positively classed as benign, I might add, even classified as some one type of benign tumor, then it must be recognized as suspicious, and the microscope invariably called to our aid.

Infiltration.—Whether a pseudo-capsule was present or not, sarcoma will attach itself to other structures, and lose, if it had, its mobility. That is to say, that it first becomes immobile in the organ in which it originates, in such a way that both the organ and the tumor may be moved relative to subjacent and superjacent structures, but not relative to each other, yet there is no definite time for such occurrence. I desire to emphasize this simple statement as to what constitutes mobility and to apoligize for thinking it necessary. Later both the organ and the tumor are immovable,

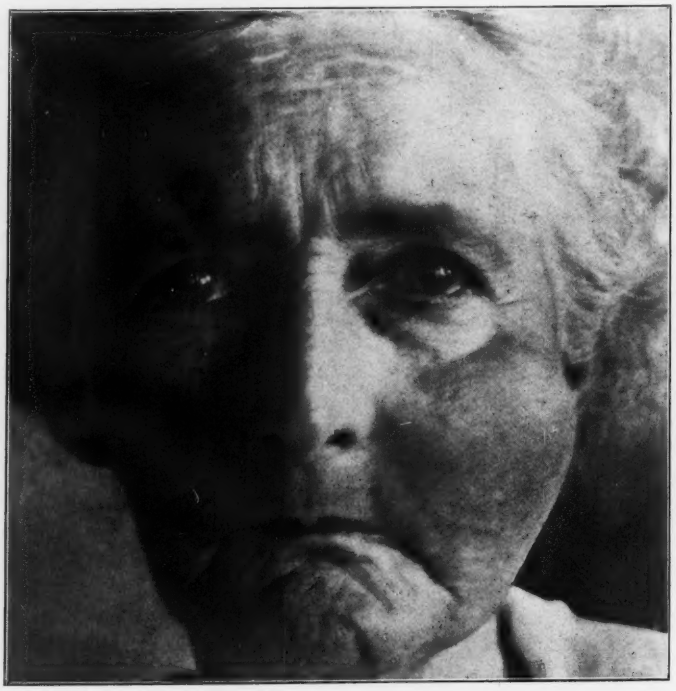


FIGURE 1.—Sarcoma of left superior maxilla in woman 68 years old, removed three months ago. This was one of the cases suffering pain.

the latter attaching the former to adjacent tissues by literally growing into them, obliterating the connective tissue planes or spanning some serous cavity and attaching parietal to visceral coats.

Infiltration is along the lines of least resistance in the first place and in the second is very unlikely to cross certain anatomical lines. As an example of this may be cited the infrequency with which a sarcoma of the diaphysis crosses into or through the epiphyseal line. On the other hand early and extensive invasion of the lumina of veins occurs; and the finger or root-like process extends unhampered along the venous channels ready to be broken off by a slight accident, or without it, and be deposited at a remote point and establish a metastasis. These extensions are capable also of growing along the lumen of veins surrounded by resistant walls and on reaching the surface of developing into distinct nodules. So an intraocular sarcoma may show nodules on the outer surface of the sclerotic at the points of exit of the venæ vorticosæ, and likewise sarcoma of the periosteum attacks the marrow by traveling along the veins communicating between the two through the Haversian canals, or sarcoma of the medulla may likewise attack the periosteum. Such minute fibrils of direct extension are hopeless to naked eye observations, and emphasize beyond the remotest question the fact that in periosteal sarcoma the bone should be removed with the tumor, and *vice versa,* that no subperiosteal excision of sarcoma of bone should ever be attempted.

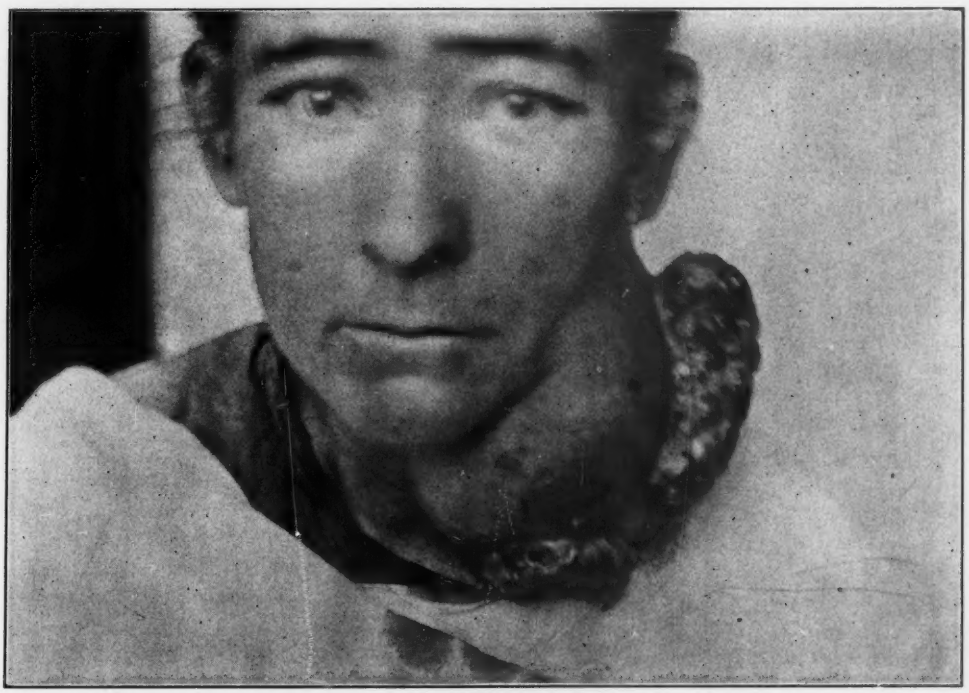


FIG. 2.—Inoperable Sarcoma Neck, resulting from a mole incompletely removed by ligature. This tumor illustrates the effect of incision of malignant growth in the hope of liberating pus. Patient aged 35.

I have stated above that sarcoma tends to follow lines of least resistance. This needs to

be modified somewhat inasmuch as it respects very uniformly certain structures whose capacity to resist such invasion would seem to be small; for instance, a sarcoma will grow around a joint and destroy the bone, but not invade the thin, and one would think, helpless synovium. Admitting such exceptions, however, the rule is so widely applicable as to be worth our study. Mediastinal lympho-sarcomata (not so named because of any connection with the lymphatic system, but from a structural resemblance) will gradually surround nerves, bronchi, vessels, pericardium, enter the lung at the root, follow along the structures entering here, compressing and collapsing them until their function is destroyed. It may grow upward along fascial planes, underneath the cervical muscles and expand on reaching the triangles of the neck, not as metastases, but as one tumor mass. Likewise, in sarcomata occurring about the spinal column paraplegia may result from a direct growth of the tumor through the intervertrebral foramina and intra-spinal enlargement which produces pressure on the cord.

Again, in the face, especially the upper jaw, where sarcoma so frequently originates, it will search out the foramina, enter the skull, there expand and give pressure symptoms, leaving such small evidence of continuity as to escape our notice. There is no nook or cranny through which these tumors, hideous alike to the surgeon and the patient, will not enter so easily, so quickly, and with so little trace that the surgeon must not only overlook such extension, but may be compelled, even if suspecting it, to refrain from an attempt at removal. Early recognition, or early action in case of the least suspicion, is all our present knowledge offers in the way of reducing the horrors of a disease behaving so insiduously.

Around nerves sarcoma may so develop as to inhibit or destroy their function. While they will completely surround lymphnodes with no effort to invade them. In melanotic sarcoma, however, the nodes appear filled with melanin, even though they show no sarcoma cells.

When once a sarcoma gains entrance to a muscle sheaths or originates within it the infiltration of tumor cells invades the intrafascicular spaces, isolating muscle fibres from each other so that on physical examination there is apparent a distinct invasion or destruction of the muscle, and on section the appearance is that of complete obliteration of all muscle tissue within the bounds of the tumor, yet under the microscope the muscle fibres are seen to remain.

In general, sarcoma displaces adjacent tissues more than carcinoma does, yet ultimately it will invade every structure that would tend to retard its progress.

Shape, Size and Consistency.—Sarcomata, as a rule, are globular, or fusiform in shape, but as may be inferred from the above, the contour is modified by surrounding resistent structures into any conceivable shape. It may be given as a fairly definite rule that sarcomata growing from soft tissues when covered by non-resisting structures, are more or less globular, as in sub-cutaneous tumors; those originating in muscles, bone and periosteum are fusiform unless the shape of the bone or muscle is irregular or broad and flat respectively, after their growth has been sufficient to bring them under the influence of surrounding barriers. Sarcomata are frequently nodulated much after the fashion of certain uterine fibromata. This may be true of the original tumor, giving the appearance of tumors growing on a tumor, or of several tumors being welded into one; or again a somewhat similar appearance may be produced by the fusion of closely situated secondary tumors with the primary (Cf. Fig. 5).

The size of sarcomata is exceedingly variable, even considered at approximately the same number of months' development. The rule is that they are larger tumors than cancers; any very large malignant tumor, *caeteris paribus,* is more probable the former than the latter.

The larger the tumor at a given time, and the more rapid its growth the more probably is it a small round-celled tumor. The spindle-celled tumors are usually slower and ultimately reach a smaller size than the round-celled group. Yet I have recently removed a sarcamatous uterus weighing 13 pounds, the bulk of whose weight was acquired within the six months prior to operation (See Figs. 3 and 4). Secondary tumors do not, as a rule, reach the size of the primary tumor; yet it is true that the primary growth may remain so obscure that the presence of a malignant tumor may be suspected only when secondary growths become manifest. When metastases are numerous there are large numbers of very small ones, and at times there seems to be a miliary condition, where the little, secondary growths have invaded the whole structure of one or more organs.

There is nothing distinctive in the consistency of a sarcoma. When taken, however, in conjunction with the remaining signs and symptoms or when used as a diagnostic difference between this and another tumor, it may be of incalculable value. The more rapid the growth of a sarcoma the softer its consistency; so much so that it is frequently fluctuant or semi-fluctuant, and may lead the unwary into the blunder of incising the tumor in the hope of finding and liberating pus. I have seen no less than three such cases this year, and the uniform result of this procedure can be seen well illustrated in Fig. 2. A digression here may be pardonable: Fluctuation does not mean pus; it means the presence of fluid, or such succulent solids as to behave like fluids. Then all the way from this soft, fluctuant tumor to those of absolutely bony hardness are to be seen. The ordinary spindle-celled sarcoma may be as firm as fibroids, while chondro-sarcoma and osteo-sarcoma, which contain not only malignant cells, but actual deposits of bone or cartilage, resemble

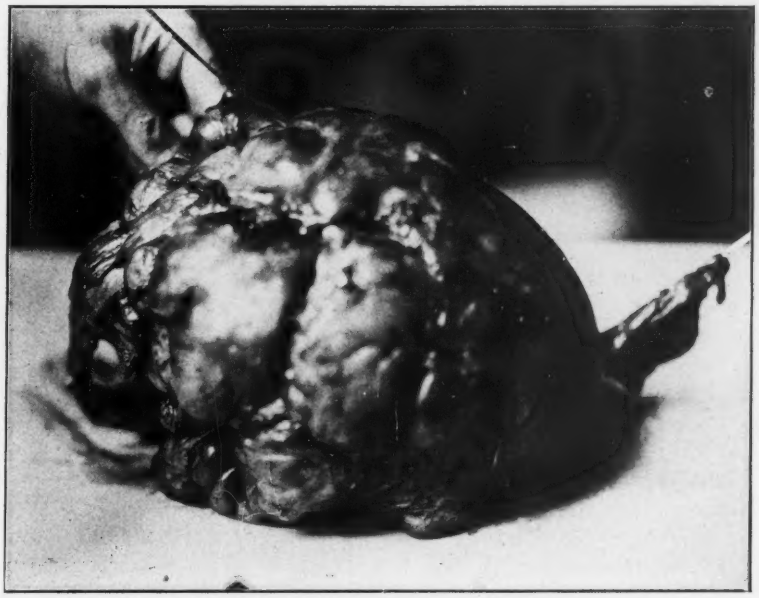


FIG. 3.—Anterior view. Spindle-celled Sarcoma of Uterus; woman, aged 49. This tumor had been recognized ten years ago as a small fibroid and the patient advised that it would disappear at the climacteric. This tumor grew from the size of an orange to 13 pounds in six months.

those tissues in their resistance. There is this feature of importance in sarcomata, viz., that they, when large, are rarely of uniform hardness. There are to be found soft areas of various sizes, and these when large enough may show distinct fluctuation. These areas are due to degenerative changes or to the escape of blood into the tumor substance. Again, in those benign tumors which have undergone malignant change, the consistency of the tumor may conform largely to that of the original growth, or rapid enlargement and softening may occur throughout. Still the presence of parts of the original tumor unchanged in consistency is no proof that it, too, is not malignant. Angeiosarcoma may be so soft that only the time of appearance, the rapid growth and the constitutional symptoms enable one to distinguish it from angeioma.

Pulsation and even bruit are at times observed in sarcoma. This is especially the case in myelogenous sarcoma. In this type there is a very large blood supply and the distinction from aneurysm must be made most positively.

Surface Appearance.—In only those tumors situated close to or growing toward the skin do we find changes worth noting, if we except those visceral tumors, such as sarcoma of the liver, in which an obstruction of a deep vein forces a compensatory enlargement of superficial veins. The skin over superficial sarcomata becomes at sometime red. It does not show the other local signs of inflammation; this increase of color is simply due to the great vascularity of the tumor. The veins in the skin overlying large sarcomata are practically always enlarged, and the surface may be either smooth or bossellated.

Incidence.—The time of incidence of sarcoma is from the earliest months of life to the ripest old age. I think the profession too prone to believe that the vast majority of tumors occur in people under 30, and that this is a mistake. When the number of people at the age of 70 is compared with the number at the age of 30, it will probably be found that the percentage of sarcomata in the old approximates the percentage of youth much more closely than we have been led to believe. Instead of saying that cancer affects the old and sarcoma the young, beautiful and convenient as this differentiation may seem, it would be far nearer the truth for us to say that sarcoma may come at any age. The average age of twelve sarcomatous patients whom I have seen during the last 12 months was 53 years. The youngest was four years old; the oldest was 73 years. The average is doubtless far higher than a large number of cases would yield, but I am giving it to impress the fact that sarcomata do occur often in people beyond middle life.

Rate of Growth.—The development of sarcomata is more rapid that that of carcinomata, and the average sarcoma is larger than a carcinoma of a corresponding age. When found in the young they grow more rapidly than in adults. In adults even these tumors may grow surprisingly fast, so rapidly indeed as to be mistaken for a phlegmonous lesion. Billroth has reported a sarcoma of the abdominal wall, in which the diagnosis of abscess was at first made. These very acute cases are found much more frequently in the young, and are so devastating in their sweeping growth that the total duration is only a few months. On the other hand, the duration may be very long. Quoting Billroth again, he reports a case of sarcoma of the occipital region which, during twenty years, was operated on fifty times. Others as Pick, Tillaux, and Quenu mention cases which have endured for eighteen or twenty years. A case I operated on five years ago had had a tumor on the soft palate fourteen years, which when excised showed unmistakeable evidence of sarcomatous elements under the microscope. It may be properly claimed that these tumors were benign and have undergone malignant change. This is doubtless true of many of them, yet the lesson to the wise is the same. The average life of sarcomatous patients is from eighteen to thir-

ty months. From the internal structure of sarcomata it is easy to understand that hemorrhage may occur into the substance of the tumor causing a sudden very large increase in the size of it. These hemorrhagic spots may later be replaced by cystic cavities.

Trauma.—Trauma plays a very important part in the history of sarcoma. So valuable a part does it play that any tumor coming up within a few weeks or months succeeding a severe injury, whether it be a fracture or a contusion, should arouse the most active suspicion on the part of the surgeon; and if a positive diagnosis of a benign lesion cannot be made, resort should at once be had to the microscope. Not that every swelling, even if hard and permanent, following an injury, is sarcoma.

A case in point occurred in this city, where a young man received an injury to his thigh and developed a hard mass closely adherent to the bone. A skiagraph was made, which indicated that the tumor was not sarcoma, and this was later confirmed by the microscope, the report being that the growth was bony, apparently myositis ossificans. There were no sarcoma cells. This case illustrates how the last resort should be used and if the finding is against sarcoma no harm results. I would give this note of warning: Absence of history of injury is of no evidence against a diagnosis of sarcoma.

Situation.—The histological distribution of sarcomata is to be remembered. I shall not at this juncture discuss the sites of predilection, but simply refer to the fact that, as sarcoma is of mesoblastic origin, it will be found situated usually at some depth beneath the integument, and that if it arises from the integument, as it does in a small percentage of cases, it will come from its connective tissue. Usually here it is preceded by one of three contributory elements, papilloma, cicatrix, or mole.

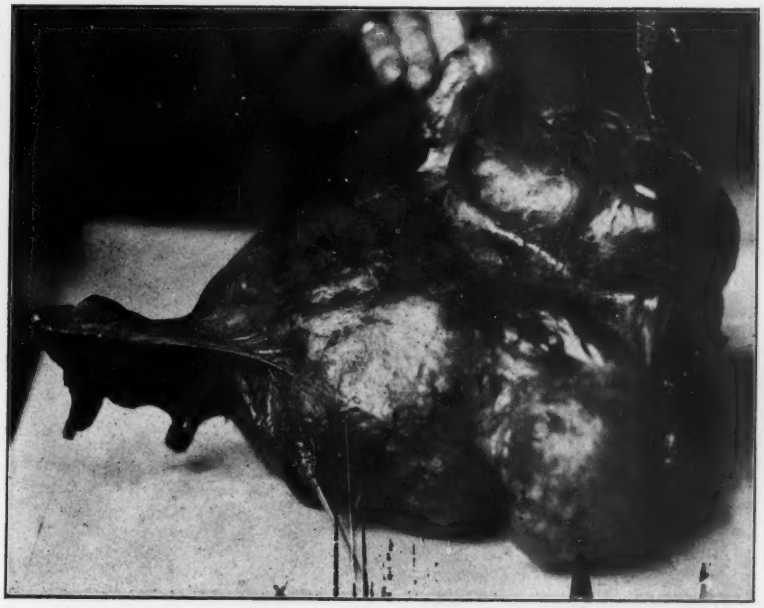


FIG. 4.—Posterior view of Sarcomatous Uterus, same as Fig. 3.

Pain.—Pain is too frequently esteemed an essential symptom of sarcoma. That this group

of tumors may be excruciatingly painful is a common observation; that absence of pain has any diagnostic value is a snare and a delusion. Surely pain will come as a routine symptom at some time in the evolution of a sarcoma; but we should cease to look for pain before pronouncing that the tumor is dangerous, and should never hesitate to operate because pain is wanting. Physicians can very wisely educate the people in this direction by assuring and reassuring them that painfulness is not a basis for action in malignant tumors, and that the nature of sarcoma is such that, it may be, when pain forces them to clamor for operation the sole opportunity to offer a chance of cure is lost. The large sarcomatous uterus (Figs. 3 & 4) produced no pain at all, except inconvenience from its weight. In the case of sarcoma of the thigh, illustrated (Fig. 5) pain was not present until the secondary nodules appeared near the origin of the muscle, when it became fairly painful, about three weeks before operation. And it was this far more than the fact that a spreading tumor was in his body that drove this man to the operating table. The sarcoma on the neck (Fig. 2) ulcerated, discharging foul fluids was productive of practically no pain. The truth is that out of the group of cases seen in the past year and used as a foundation for this paper, pain was complained of by only three, and two of these were situated in the superior maxilla.

FIG. 5.—Recurrent Sarcoma of thigh in man, aged 56. The large mass was fluctuant and contained a brownish, serous fluid. Note the scar left by a former operation. Just to the right of cross between scrotum and thigh, there are two small painful nodules.

Cachexia.—Cachexia is another deceptive symptom of sarcoma. It does come invariably almost; but it comes late. It is out of proportion to the size and rate of growth of the tu-

mor. Sarcoma patients are, sadly enough, usually in robust health for a considerable time after the onset of the tumor. When hemorrhage, rupture of a cystic cavity, or incision of the tumor under the misconception that it is an abscess has occurred, and there results a raw, bleeding surface or there is a continuous drainage of serum plus more or less pathogenic or saphrogenic infection, cachexia is much more rapid in its development.

Blood.—Examination of the blood gives no valuable findings. There may be present a leucocyte count reaching sometimes as high as 20,000, with a slightly higher than normal percentage of easinophilis and lymphocytes.

Fever.—The temperature may rise and run an irregular course. This seen so frequently in sarcoma of the viscera as to be considered of diagnostic value. It occurs also in acute, rapidly-growing sarcomata and in sarcoma of the bones at times. It usually ranges from 100 to 101 degrees, sometimes reaches 103 degrees, and rarely, as in Vanvert's case of sarcoma of the femur, reaches 104 degrees.

Retrograde Changes. — The degenerative changes seen in sarcomata are often such as to deceive one as to the true condition of things. The most delusive are those that change extensively the consistency of the tumor. The two most important of these may be mentioned as cystic and hemorrhagic. The tumor shown in Fig. 6 shows a large mass below that had been almost completely occupied by a cyst cavity and a serous-looking fluid, while the upper two small nodules were undergoing degeneration in their center and contain each a small amount of colloid. It may be proper to state here that in the primary tumor, removed by another physician some months before there was a cavity filled with a fluid resembling that in the large cavity of this tumor.

Myxomatous degeneration may be found either occupying small areas or they may unite until a large portion of the tumor volume is filled with this substance, while the blood-ves-

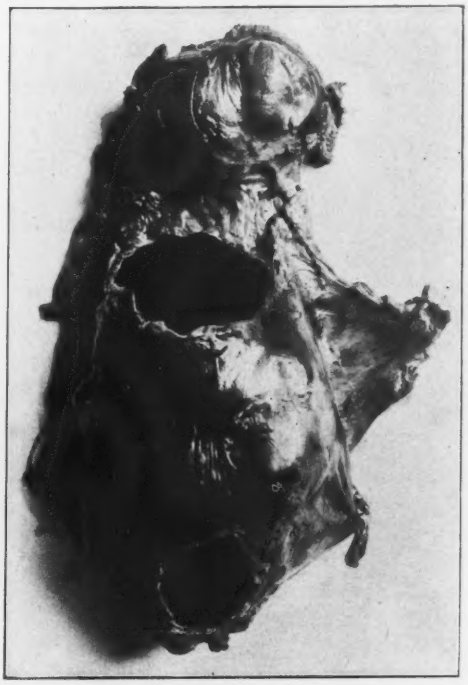


FIG. 6.—Same as Fig. 5, showing the large cyst opened above and below and the two small nodules above. All these tumors are in the adductor longus muscle which was excised, and the fibres of which can be seen in the cut.

sels and a slight connective tissue constitute a frame-work.

Ossification and chondrification of sarcoma may be seen in those tumors arising from osseous or osteogenetic tissue.

Ulceration, fatty degeneration and caseation are seen. It is doubted if the latter occurs in the absence of tubercle bacilli.

TOTAL EXTIRPATION OF THE URINARY BLADDER.

W. KOHLMANN, M.D., NEW ORLEANS, LA.

Gluck, in 1881, showed the possibility of removing the urinary bladder from dogs. Various surgeons have since performed the operation on the human subject, mainly for malignant disease. The high mortality of the operation and the poor permanent results and rapidity of recurrence have in many instances prevented the performance.

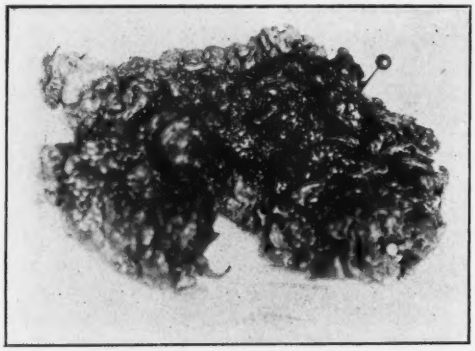
The mortality, according to Wendell, Watson and others, is about sixty per cent. The operated cases recurred very quickly, mostly during the first year. There are a number of cases which have been free from recurrence for a number of years, the cases of Hogge, Pawlick, and Czerny's case of Sarcoma. There is no doubt that the surgical interference has relieved suffering and prolonged life. In all instances, the patient's condition is made more endurable, even if permanent freedom from relapse is secured only in the minority of cases. Kummel considers excision indicated in all malignant tumors of the bladder and according to Mikulicz all patients operated on have been greatly benefited.

Progress in the improvement of illuminating instruments and the more general adoption of cystoscopic examination will enable an earlier diagnosis and earlier radical interference.

The case I wish to report is one which eventually called for more than partial excision and could not get relief without total excision of the organ.

Mrs. A. C., 48 years, widow and mother, March 29, 1908, discharged May 9, 1908.

Family history: Father died at age of 75, mother at 72. Had only one sister who died at age of 54 from heart trouble. No history of neoplasms in family.



Photographic Specimen of Bladder.

Patient was always in good health. Began to menstruate at 13, was always regular and suffered only occasional pains.

Present illness began about fifteen years ago. She had pains and burning in bladder, especially during micturition, and at times difficulty in urinating. Notwithstanding treatment, symptoms continued. Patient consulted me October, 1906. Cystoscopic examination was made and the presence of a papillomatous tumor easily demonstrated.

October, 1906, kolpocystotomy was done

and a papillomatous growth the size of an orange removed which, at the time, did not show any malignant characteristics. Wound was sutured and healed first union. After the operation patient was in good health till fall, 1907, when symptoms returned, only more severe than before. Urine contained pus, blood, and casts. Marked loss of weight.

Patient consulted me again November, 1907, and immediate operation was advised. November 18, suprapubic opening was made and whole bladder lumen was found filled with papillomatous tumors of different size. By means of ligature, clamp and cautery, these tumors were removed. Patient again made good recovery, was able to leave the hospital at the end of six weeks, the suprapubic opening having almost closed. The small opening closed shortly afterwards. There was little relief from this operation. Six weeks afterwards all the distressing symptoms returned and patient entered hospital again to have cystectomy done, the only possibility of giving her relief.

November 30, 1907, operation was performed. In Trendelenburg position a vertical incision three inches in length was made in linea alba, excising at the same time the cicatrix of the suprapubic opening. The incision was carried down to the bladder wall. The bladder was opened and found filled with innumerable papillomatous growths of various size. The cavity was flushed with a warm solution of two per cent. borac. acid and packed with iodoform gauze. By blunt dissection the peritoneum was pushed back without being opened and covered by sterile gauze, the bladder was freed as far down as the base. The urethra was next divided and under continued traction—the bladder being well drawn forward—the ureters were brought into view and easily divided. The right ureter was enlarged and dilated on account of an obstruction, which a mass at the urethral opening had produced. Both ureters were temporarily secured by silk ligatures, to be easily recognized.

It was rather difficult to loosen the bladder from the vagina in the region of the cicatrix following the kolpocystotomy. The vagina was opened in this region. Small slits were made in the vaginal wall and the ureters carried through and kept in position by chromic catgut suture. The cavity in the pelvis was packed with iodoform gauze and a Pezzer Catheter inserted to the depth of the cavity and conducted through the vagina. The abdominal opening was closed with silkworm sutures, a small drain opening being left in the lower end of the incision.

Loss of blood was moderate and, even if there was considerable shock, the patient's life was never in danger. The cavity filled in quickly and the catheter was removed after ten days. Patient made quick recovery and was able to be about in three weeks and left the hospital on May 9th, the abdominal wound having closed and the urine discharging by vagina. She had considerably increased in weight and in general appearance.

To make patient more comfortable and free her from the continued dripping of urine, closure of vaginal opening was decided May 25. The vaginal opening was freed by dissection and closed by deep catgut and superficial silkworm sutures through the perineum. Pezzer Catheter, being easily retained in urethra, drains the urine into a rubber urinal.

DISEASED MAXILLARY ANTRUM.

B. D. SIBLEY, M.D., BIRMINGHAM, ALA.

In order to treat intelligently a diseased organ, it is essential that we have a thorough knowledge of the physiology and anatomy, as well as the relation of the surrounding parts of the organ. Otherwise we cannot form a correct idea of the pathological condition we have to deal with. The antrum being nothing more than a subdivision of one of the nasal cavities, we shall first consider the general anatomy and physiology of the nostril.

In the simplest form of animal life, which we find existing in water, the olfactory organ consists of two small depressions on the surface of the snout. These depressions are covered with epithelium, and are connected with the brain by olfactory nerves. As we ascend higher in the scale of fishes we find these depressions become larger, and are like pockets, but do not communicate with the mouth. Notice Illustration No. 1.

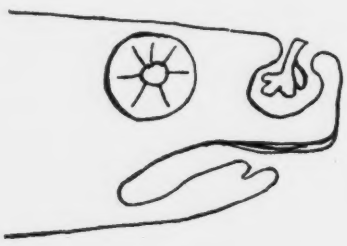


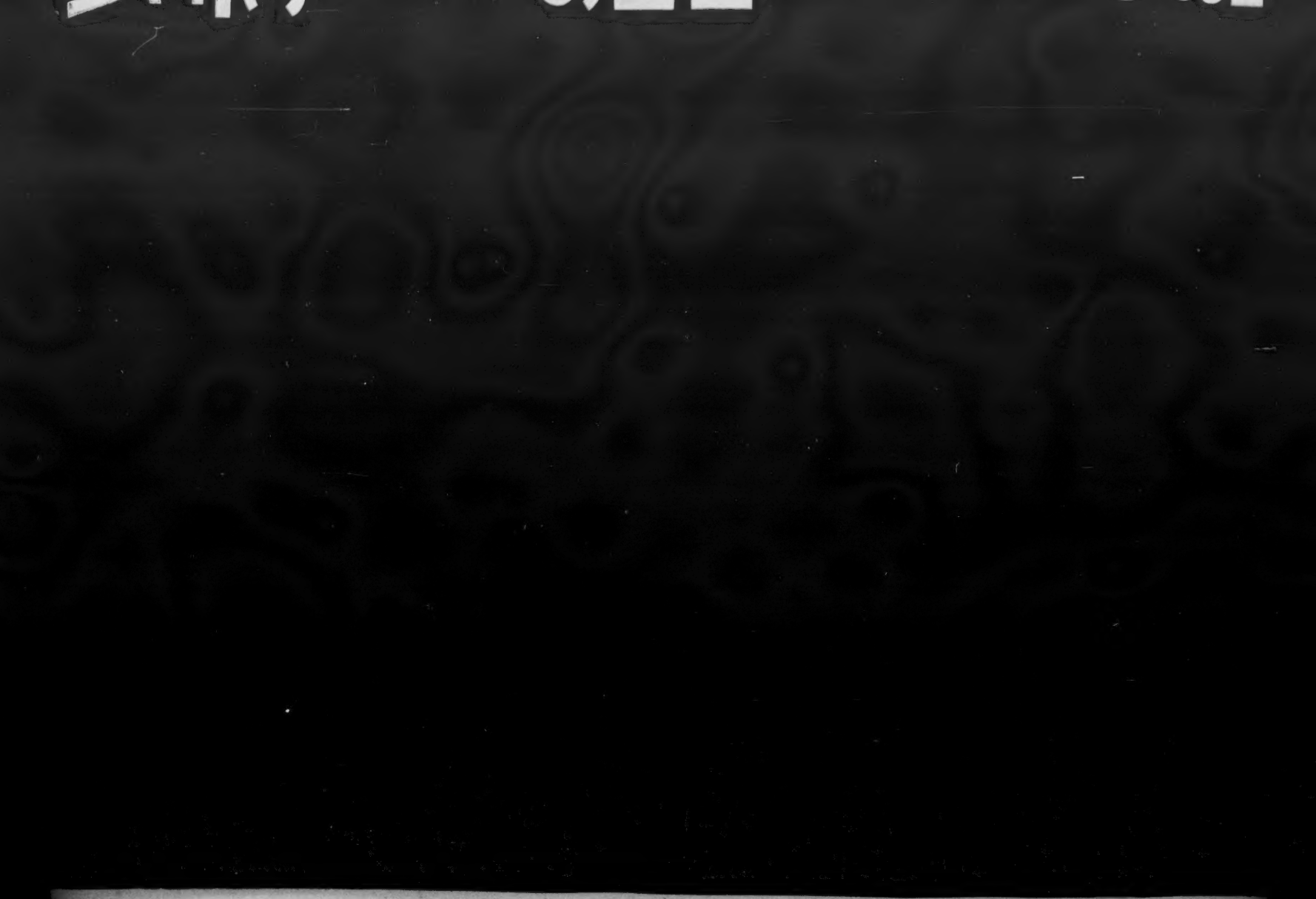
ILLUSTRATION NO. 1.

Still higher in the scale of animal life, such as the snake or turtle, which lives at times in water and in the air, the process of respiration becomes different. The structure of the olfactory organ becomes changed; the nasal cavities have a respiratory, as well as an olfactory portion.

Still higher in the scale, in those animals which have an acute sense of smell, such as the dog, the arrangement becomes more complex. The main cavity subdivides into many smaller cavities, and the turbinates are more numerous and subdivide into many branches. In these animals the accessory cavities communicate freely with the main cavity, the olfactory nerve endings are distributed throughout the mucous membrane of all the accessory cavities. In man, who is endowed with higher faculties, and not dependent upon his sense of smell for finding food, this system of labyrinths has degenerated into much simpler structures. The olfactory nerves are no longer distributed throughout the accessory sinuses. Notice Illustration No. 2, which is a rough diagram of the nasal cavities:

ILLUSTRATION NO. 2.

The entrance in each nostril is a small opening, but the main cavity is large; then, again, the exit is a small opening. It is thus seen that the nostril is really a reservoir with a small opening at each end, and might be compared to a lake where the air flows pure and free and yet retarded long enough to be



warmed and moistened during its journey through the nose. The air is still further retarded by the two turbinates, which afford more surface for the air to pass over; and then the accessory sinuses keep an amount of residual air to mix with the fresh air.

On the outer wall of the main nasal cavity, situated beneath the middle turbinate, are several small openings, which are the openings of the accessory sinuses; respectively, frontal sinus, Ethmoid cells, and Antrum of Highmore. These accessory cavities are closely related, and are branches of the same main cavity. They develop by a budding out from the main cavity along a crescentic groove known as the Hiatus Semilunaris. See Illustration No. 3.

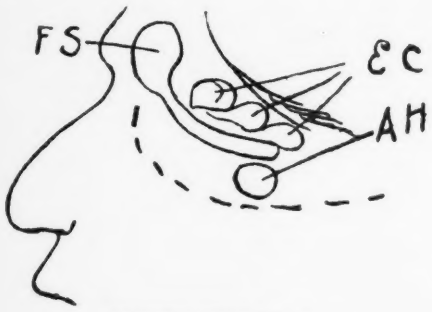


ILLUSTRATION NO. 3.

F. S. is the Frontal Sinus; E. C. the Ethmoid Cells; and A. H. the Antrum of Highmore. The dotted curved line marks the outline of the middle turbinate, which has been removed. The upper end of the Hiatus Semilunaris spreads up and out over the orbit and forms the Frontal Sinus. The Ethmoid Cells develop along the upper edge of the groove. The Antrum of Highmore develops from the lower extremity of the groove and spreads out under the orbit.

In the dog the frontal sinus and ethmoid cells empty directly into the Antrum of Highmore by means of the crescentic groove; but fortunately for the dog the normal opening in the antrum extends down to the floor and empties into the nose in the inferior meatus; while in man the normal opening in the Antrum is situated high up above the floor and empties into the middle meatus above the inferior turbinate. You can readily see from the close relation along this groove how easy it is for one sinus to transmit infection to the other. They are often simultaneously involved.

The Antrum of Highmore, as stated above, buds out from the lower extremity of the Hiatus Semilunaris, and spreads from this point outward, forward and downward. There is little or no development upward, on account of the orbit.

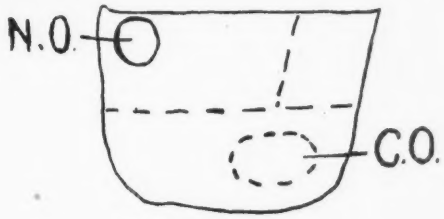


ILLUSTRATION NO. 4.

Chart No. 4 shows the inner wall of the Antrum; N. O. represents the normal opening; the horizontal dotted line shows the line of attachment of the inferior turbinate on the nasal surface of this wall; the vertical dotted line shows the position of the Lacrimo Nasal Duct. C. O. shows place for counter-opening into inferior meatus.

When there is any failure in development it is usually in the downward direction. This is why the floor of the Antrum is sometimes found to be very thick. Illustration No. 5 shows the difference in thickness that the floor of the Antrum may develop.

The Antra are pyramidal-shaped cavities with bases toward the nostrils. The principal surfaces of interest to the surgeon are the inner or nasal wall and the anterior wall. On the inner or nasal wall, which forms the partition between the Antrum and the main nasal cavity, are the following landmarks. (See

Illustration No. 4.) The normal opening is situated high up at the posterior angle, a bad location for drainage. Beneath the line of insertion of the inferior turbinate, and in front of the location of the lacrimo-nasal duct, the wall is very thin, and is the place to make a counter-opening from antrum into the nose, and is the best place for drainage. The points to be remembered about the anterior wall are that the antrum extends out as far as the malar ridge, and to be careful not to injure the infra-orbital nerve.

As to pathology, the diseased condition is the same that we have in any bony cavity lined with mucous membrane in which there is bad drainage. In the acute attacks there is hyperæmia, and swelling of the mucous membrane and increased secretion. If the normal source of drainage is blocked by the swelling; or the discharge is kept pouring into the antrum from the cavities above (frontal sinus and the ethmoid cells); it accumulates, and the bacteria present increases the inflammatory process, the mucous membrane becomes thickened, and granulation and polyps may form. If the antrum becomes closed it may rupture either into the orbit, spheno-maxillary fossa, or into the nose.

As to treatment, if seen in the acute stage, first try to establish free drainage. The nose should be sprayed with a 2% cocaine solution, and then a solution of adrenalin. If pus is seen beneath the middle turbinate, pass a small piece of cotton saturated with 10% cocaine solution up beneath the anterior end of the middle turbinate, and leave it there for a few minutes. Remove the cotton and pass a flat spatula up beneath the turbinate and curette such granulations as may have formed there to block the exit of the discharge from the antrum.

I always use trans-illumination in suspected antrum disease, and have found it a great aid quite often. If in doubt, in fact in every case of suspected antrum trouble, I pass a trocar up beneath the anterior end of the inferior turbinate, about half an inch back from the tip of the turbinate, and into the antrum through the thin part of the wall described above. If the trouble does not subside, and in all chronic cases, amputate the anterior end of the middle turbinate, and curette the granulation and necrosed ethmoid cells. If this fails to relieve, then amputate the anterior end of the inferior turbinate, and make an opening into the antrum through the thin portion of the internal wall of the antrum through the inferior meatus. This is the point described above, and is the best location for drainage. The antrum can be irrigated through this opening. In acute cases this method has served me well; but in chronic cases the Caldwell Luc operation has served best.

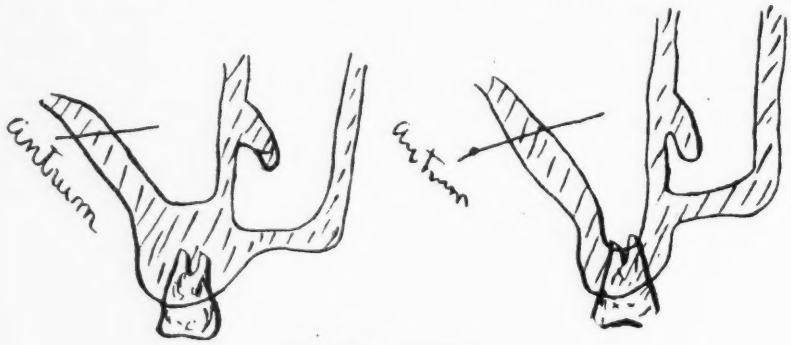


ILLUSTRATION NO. 5.

In doing the Caldwell Luc operation, make

the opening in the front wall large enough so that the antrum may be thoroughly curetted and inspected. Pass a strip of gauze saturated with peroxide of hydrogen into the antrum, and then swab the cavity with dry sponges of gauze. Insert a small electric lamp into the cavity, and you can see the granulations left there. In curetting the cavity pay particular attention to the angles, especially the region of the normal opening. The counter-opening is enlarged and made smooth down to the floor of the nose. The antrum is dried and packed with a strip of gauze in such a way that the last end is passed out of the counter opening and out of the front of the nose. The strength of this strip of gauze should be tested, as it may break off while removing, and a piece be left in the antrum.

Some operators close the opening in the mouth at the time of operation. I prefer not to do this, as I may wish to inspect the antrum after the gauze has been removed. The mouth wound will close itself in time. The gauze should be removed through the nose in four or five days.

In conclusion, first resort to conservative treatment before recourse is had to radical methods; for many cases of acutely diseased antra may be relieved by shrinking the region of the normal opening beneath the middle turbinate.

When the front wall has been opened, a counter-opening should be made into the nose through the inferior meatus, and the antrum drained through the nose.

In cleaning the antrum after it has been thoroughly curetted, sponge the cavity with peroxide of hydrogen, dry, and inspect the angles. Always test the strength of the strip of gauze before inserting into the antrum.

Remember that the antrum may be a secondary infection from one of the sinuses above, and proper drainage secured for their discharge.

SOME VASCULAR PATHOLOGY ON PREGNANCY.

BY S. S. CROCKETT, M.D., NASHVILLE, TENN.

When we consider the widespread metabolic changes that proceed so rapidly in the cells and tissues of the pregnant woman, the serious pathology that so often supervenes in the various organs concerned—especially in providing for a safe output of waste matter—it is indeed remarkable that the vascular system is so seldom the seat of pathology. This becomes still more noticeable when we recall that the blood and its vessels are the mediums through which these changes largely occur. Nature—the good general that she is—seems to guard well her lines of communication.

Phlebectasis.—Generally speaking, diffuse dilatation of the veins is not uncommon. The dilatations are usually associated with atrophic thinning of the walls of the vessels, but sooner or later develop a productive inflammation in and around the vessel wall, with increase of connective tissue hyperplasia, inevitable sclerosis and atrophy of the constituent elements of the vessel wall, with often obliteration of the lumen, oftener the formation of thrombi, occur from damaged intima, rarely calcification of the vessel wall.

Generally the cause of such conditions is to be found in any thing that leads to an increase in the venus pressure, hindering the return flow of the blood, general venous stasis from cardiac weakness, valvular disease, or pulmonary obstruction. Long-legged people, whose occupation requires a large amount of time in the erect posture, are very prone, perhaps as an effect of gravity. Heredity seems to be a contributing influence, and other cases seem to result from congenital weakness in the vessel walls. The saphemia and its tributaries, the hemorrhoidal plexus, the spermatic, the vulval and the pampiniform plexus are oftenest involved.

With the increase of intra-abdominal pressure by 500 inches during the period of gestation, it indeed seems strange that the vessels more usually involved should ever escape.

The three following cases may be of interest:

Mrs. B., age 29, of good family history and always a healthy woman, during the latter months of her second pregnancy, developed an angiomatous mass about the size of a small orange, attached to the vestibule and surrounding the meatus. It was very angry looking, but neither bled nor pulsated. It fortunately was not injured during delivery, and had entirely disappeared three weeks after delivery. It did not recur in a subsequent pregnancy.

Mrs. H., aged 32. Good family history, always a healthy woman except that she had in two previous pregnancies a very distressing cough during the last two months. During the sixth month of her fourth pregnancy felt some heaviness in her left leg, for which she sought advice. Examination revealed slight varicosed condition of superficial veins of the leg and over popliteal space. The condition gradually extended up the thigh and all the superficial veins up to the crest of the ileum became involved to such an extent that the whole extremity became swollen, blue and so heavy that locomotion was almost impossible. During the last month of pregnancy by the use of the elastic stocking, including the thigh, she was able to walk about the room. She had an uneventful delivery, and all the varicosities

were gone when she got up on the fourteenth day.

Mrs. C., aged 24, was almost parallel to the above except that the varicosities were not quite so extensive, nor the inconvenience so great. She has since been pregnant with no return of the varicosed condition.

Acute endocarditis must not be overlooked in this connection, and needs only passing mention. Two cases have fallen under my observation, both occurring during the first week of the puerperal period, both cases recovering after a precarious and prolonged illness of about six weeks, but with permanent valvular damage. Both these cases were pronouncedly toxemic before delivery, and in that condition, in all probability is to be found the cause of the endocarditis.

Crural Phlebitis.—Two cases of especial interest:

Mrs. W., age 34. Ninth pregnancy, two abortions; youngest child three years old. All her labors were uneventful except one; the pregnancy was a transverse presentation from which, according to her accounts, she recovered slowly and imperfectly.

During last pregnancy she did badly during last eight weeks, slept badly, constipated, coated tongue, slight edema, defective kidney elimination, with distressing cough for three weeks before labor. Transverse presentation, slow and imperfect dilatation, version, asphyxiated child. Puerperal period without elevation of temperature, and otherwise normal. She was out of bed on the fourteenth day. During the night of the fifteenth day she suffered with pain in left hip, requiring morphine. This was followed by swelling and pain and immobility throughout entire left leg and thigh, which lasted for about six weeks. During entire six weeks she ran a very rapid pulse, 120 to 140, temperature ranging from 100 to 102. On the nineteenth day after delivery and the fourth day after the discomfort in hip was first noticed she had a terrific uterine hemorrhage, from which she nearly lost her life.

Three weeks after the phlegmasia on left side commenced, she had a similar pain in right hip followed by similar phlegmasia in right leg and thigh. She was so completely disabled as to locomotion that she could only be handled on a fracture bed.

On the forty-second day after delivery and twenty-seventh day after the first hemorrhage she had a second uterine hemorrhage that rendered her pulseless for several hours. Between the hemorrhages there was not the slightest suggestion of a vaginal discharge, nor was there at the time of the hemorrhage the least pelvic pain. She was confined to her bed for about three months. Her convalescence was associated with no swelling of either legs or feet. Since which time she has been perfectly well and has menstruated regularly and normally.

Mrs. V., age 38, was seen in consultation in adjoining county. Third child, labor normal, puerperal period uneventful up to fifteenth day, when she complained of pain in left hip, followed by swelling, pain and immobility in entire lower left extremity. One week later the same phenomena began and followed each other on right side, becoming perfectly helpless, with both entire lower extremities greatly swollen and tender. She suffered very much, requiring morphia at intervals for ten days. Her pulse varied from 100 to 130. There was slight rise of temperature at the beginning of her illness, and at no time for the succeeding five weeks was she free of some elevation of temperature, it at no time, however, going over 102.

She was able to leave her bed at the end of ten weeks. Her subsequent history I have been unable to learn, as she has moved to a distant State.

The picture presented by the swelled leg of the puerperal woman is familiar to most of you. Its nomenclature is of only historical interest.

Various explanations of its pathology have been presented in the past. What may be the

opinion about it in the future remains to be seen. At the present time it is regarded as a manifestation of septic infection, taking the form of septic thrombosis of the femoral veins. This is thought to be brought about as an extension of a septic thrombosis from the uterine sinuses through the pelvic veins down into the femoral and its tributaries. It is thought that the thrombosis may also occur from pressure upon walls of the vessels by the edema resulting from septic pelvic cellutitis—rather a severe tax upon credulity unless it is assumed that the vessel wall itself becomes infected through either its vasa vasorum or lymphatics. If that assumption be true, then a septic phlebitis precedes the thrombosis. In either event, whether the thrombosis has been preceded by phlebitis or not, the intra-vascular coagulation and obstruction could scarcely occur from such a cause without the thrombus itself being infected with the micro-organisms of the original infection, in which case, softening and dislodgment of the thrombus, dissemination of septic emboli throughout the body, multiple abscess formation, and the whole picture of pyemia or infection of the blood, would follow. How seldom such results occur in swelled leg of the puerperal state! True, sudden death from embolium of pulmonary artery does sometimes happen, but that is apart from this discussion.

Crural phlebitis, so-called, following delivery is lacking in too many of the phenomena of septic thrombosis, occurring in other situations, to warrant the present accepted explanation without further question. The supposedly same condition following delivery is very rarely fatal, while septic phlebothrombosis, or thrombo-phlebitis, is nearly always fatal. Again, if this condition was of septic origin, would it not oftener appear during and form a part of some of the other and more or less rapidly fatal forms of sepsis?

When it is considered in this connection that during pregnancy there is an increase in the volume of the blood, largely from an increase of its watery portions, resulting in an increase of blood pressure, that there is an increase in the amount of the fibrin factors, resulting in increased coagulability of the blood, that the course of the blood from the lower extremities slowly moves against the increased intra-abdominal pressure, through vessels that are attenuated by this pressure, there is only lacking a damage to the intima as a necessary element to develop intra-vascular coagulation.

It has been demonstrated beyond question that the blood of the pregnant woman is more toxic than the blood of other persons, and that endothelial and epithelial cells are the first structures that usually succumb to this poisoning. If endothelial damage to the intima should occur from the toxic condition of the blood, all the conditions for intra-vascular coagulation are fulfilled. May it not reasonably be asked after all whether the condition may not be of toxic, rather than septic origin?

THE LEUCOCYTES IN APPENDICITIS.

BY RAYMOND CUSTER TURCK, M.D.

Extra-Mural Professor of Surgery, Chicago, Post Graduate Medical School, Jacksonville, Florida.

The art of diagnosis in appendiceal disorders is as yet far from perfection. Every operator in the major abdominal field can recall numerous instances in which the operation findings failed to confirm the initial diagnosis, and this is true in an astonishingly large percentage of cases when a post-operative histo-pathological and bacteriological examination is made.

Reflection upon this fact determined the writer to a study and analysis of the factors entering into the problem of a definite and positive diagnosis and prognosis of the various forms of appendicitis. It is with the factor of leucocytosis that this paper deals. In an effect to focus information regarding the behavior of the white cells in appendiceal inflammations and infections one cannot but be amazed at the chaotic and contradictory character of the literature, and in view of this fact it is not surprising that the majority of surgeons, and physicians as well, are inclined to take a prefunctory view of the subject, and to place but little, if any, reliance upon the blood examination; the blood count if taken at all being largely a matter of form, and being considered of no more importance than the temperature, both, according to Deaver,[1] being of about equal value, and both subject to wide fluctation.

That hematological reactions to infective and inflammatory processes vary according to the reactive and resistive powers of the individual must be conceded by all who have given a thought to the subject of immunity, or to the behavior of the blood in disease. It seems absurd to presume that white cells of a feeble and anemic child of ten will show exactly the same reaction in infections of equal scope and virulence as the cells of a strongly robust man of forty, yet the literature is teeming with definite standards of white cell counts as applicable to definite conditions. The failure of these standard counts to invariably coincide with existing conditions as revealed at operation or in the laboratory is due in part to a failure to take into consideration the individual equation of reaction and resistance.

Certain fundamental hematologic reactions have, however, been demonstrated as occurring in practically all cases of like infections and inflammations, variation being a matter of degree only. It is through a consideration of these fundamentals, throwing aside uncertainties, probabilities, and average standardizations, that an examination of the blood offers the greatest aid to a determination of the variety and scope of appendiceal, as well as other, infective or inflammatory processes.

The term leucocytosis is generally used and understood as indicative of an increase, above normal, in the total number of white cells in cubic millimeter of blood. Strictly, however, *leucocytosis should be defined as an increase or decrease in the total number of white cells normal to the individual, or a variation in the percentage of the different kinds of leucocytes normal to the individual.*

According to Simon,[2] leucocytosis should be considered as hyper-leucocytosis, an increase in the total number of leucocytes, or hypo-leucocytosis, a decrease in the total num-

ber of leucocytes. Simon further divides the general subject of leucocytosis according to the increase or decrease in the relative proportion of the different forms of cells.

It seems advisable at this point to further recall that leucocytosis (more properly hyper-leucocytosis) may be *physiological,* that is, and increase in the total number of luecocytes due to *physiologic* reaction, not due to disease; or, *pathological,* that is, dependent upon and the result of definite *pathologic* processes. It is interesting to note in this connection that, as Cabot[3] states, the studies of Ehrlich and others have shown that in physiological leucocytosis no new cell formation occurs, the leucocytes being drawn from the internal organs and deep vessels into the peripheral circulation by chematoxis or thermotaxis. In a pathological leucocytosis, particularly in long standing suppurations, "there is no doubt that leucocytes are formed and turned into the circulation more rapidly than under normal conditions."

In a strictly physiologic leucocytosis the increase in the total number of leucocytes takes place at the expense of no one kind of cell, the normal relative proportion of the white cells being undisturbed.

Pathologic leucocytosis is defined by West[4] as "an increase in one kind of leucocyte at the expense of the others." We may, therefore, have a pathological leucocytosis with or without an increase in the total number of cells, indeed, we may have a pathological leucocytosis, in which there is a decrease in the total number of leucocytes (leucopenia). Since a pathologic leucocytosis depends primarily upon a variation in the percentages of the kinds of leucocytes, the total increase or decrease in white cells must be a matter of secondary consideration and importance, so far as the determination of pathologic processes by blood findings is concerned. The mere fact of finding in any case an increase in leucocytes shows nothing definite. It is impossible to determine by simple white cell counts up to 20,000 to 25,000 per cmm. whether the increase is physiological or pathological, whether it is due to pus producing organisms, or animal parasites, or whether or not it is a form of beginning leukemia. Even in the higher counts, unless the clinical symptoms are so positive as to admit of no possible error, the absolute cell count may give no definite information. While it is true that very high counts are usually a form of lymphocytosis, yet, according to Holt,[5] polymorpho nuclear hyper-leucocytosis in children may run as high as 100,000 per cmm. In these cases it certainly is necessary to know whether the increase is in the poly-nuclear or in the mono-nuclear forms. Cabot[6] states that "given a count of 80,000 per cmm. we cannot tell, without knowing the variety of cells present, whether the case is a genuine leukemia or merely a leucocytosis symptomatic of pneumonia, suppuration, malignant disease, or other condition."

In the inflammations and infections of the vermiform appendix, as in other infectious, inflammatory or suppurative processes, and in all infectious diseases except five (i.e., typhoid fever, tuberculosis, measles, malaria and influenza), a hyper-leucocytosis, if present, is always due to an increase in the poly-morpho nuclear neutrophiles.

The great majority of observers in studying the reaction of the leucocytes in cases of appendicitis take for granted that if the white cells are increased, the increase must be in the neutrophiles. No increase being found, it is assumed that the relative proportion of the cells is normal and that no pathological leucocytosis exists.

The severity, and in many instances the form of the infection, inflammation or suppuration has, until recently, been judged solely by the absolute count of leucocytes. Thus the elimination of the essential and vital feature of the blood reaction in disease has resulted in a confusion of statistics, and it is

not surprising that the deductions and conclusions are varied and contradictory.

It is unfortunate that in studying reported series of counts we have in a majority of instances, no definite assurance that the reported hyper-leucocytoses were not oftentimes physiological, eosinophilic or lymphocytic, nor that in cases showing no increase, or an absolute decrease, there was not a pathological leucocytosis present, as evidenced by a relative increase or decrease in the poly-nuclear forms. In this connection, the following quotation from West[7] is pertinent:

"It is through oversight of the fact that it is the percentages which show a leucocytosis to be pathological or not, that much odium has been cast upon leucocytic readings. This censure has come from those who have judged a leucocytosis by the number to the cmm. and given no heed to the percentages * * * we should know that it is possible to have a pathological leucocytosis in the sense of the above definition, without an increase in the total number of white cells. 95 per cent. neutrophilia has been noted when the total number of leucocytes to the cmm. was only 6,000. * * *

A careful review of the literature of appendical leucocytosis (Simon,[2] Cabot,[3] West,[4] Holt,[5] Sahli,[8] Da Costa,[9] Boston,[10] Emerson,[11] Arneill,[12] Deaver,[13] Kelly,[14] Bloodgood,[15] cannot but lead one to agree with Deaver that for purposes of diagnosis in cases where time allows of but one, or possibly two counts, practically nothing is to be gained from the knowledge of the absolute number of leucocytes.

With the possibility of a normal total count in simple catarrhal appendicitis, fulminant appendicitis and fatal peritonitis, and in view of the fact that chronic cases, and cases with abscess range from 6,000 to 60,000 white cells per c.mm., the positive diagnostic value of a single count in itself is nil. Indeed considering the single absolute count from a diagnostic standpoint, we have no assurance that a hyper-leucocytosis, if present, *is* neutrophilitic and not physiologic or lymphocytic.

Assuming, however, from positive clinical symptoms, that a hyper-leucocytosis, if present, is due to an increase in polymorpho nuclears, that it is without doubt dependent upon an infective process, we are warranted in stating upon authority that the infective process increasing in virulence or extent (if in an individual of normal reactive powers) will produce an increase in leucocytes in direct ratio to the increase in the infection.

On the other hand, an infective process decreasing in virulence or extent, will produce in the blood a correspondingly gradual decrease in the total number of leucocytes (in this we must include abscesses, from which, by reason of progressive walling off, absorption of proteins or toxins, is gradually lessening).

These two facts are unquestionably fundamentally correct, but in their practical surgical application, in dealing with the absolute count alone, we must work to a certain extent upon assumptions and not entirely upon facts.

In observing the fluctuations of counts of from 15,000 to 40,000 we have a fair assurance of obtaining a reasonably exact knowlelge of the progress of the infection. We are further justified in stating that counts below 15,000, or the fluctuation of counts below 15,000, have practically no diagnostic or prognostic significance whatever. To this the writer would add, *unless at the same time we closely observe the relative proportions of the different forms of leucocytes.*

A realization of the inadequacy and unreliability of the absolute cell count taken alone, as well as the conclusion, so concisely stated by Sondern,[16] that "the increase in the relative number of polynuclear cells is an indication of the severity of the toxic absorption, and the degree of leucocytosis is an evidence of the body resistance toward the infection," has of late directed attention to the differential percentages.

Simon,[17] in his recent work on Clinical Diagnosis, emphasizes the value of the differential count, and in this connection says: "Until quite recently the general tendency in clinical laboratories has been to lay special stress upon the absolute leukocyte count and to leave the relative values of the different forms out of sight. This should not be, and I cannot insist too strongly upon the importance of the relative count, which in many respects is far greater than a knowledge of the total number."

Simon comments upon the fact that because of the many variations and exceptions, surgeons not unnaturally decline to be guided in their operative work by the results of the absolute blood count. He further states that he values the absolute count in the study of the progress of appendicitis—only so far as a progressive increase is concerned.

The basis of the study of the differential must be a determination of the relative cell percentages in an individual of average strength, nutrition and reactive power.

Cabot,[18] places the normal percentages in a healthy adult as follows:

Small lymphocytes	20% to 30%
Large lymphocytes	4% to 8%
Neutrophiles	62% to 70%
Eosinophiles	½% to 4%

Simon[19] states that before the age of five, the percentage of small lymphocytes may be as high as 40 per cent., but that after the fifth year adult values are the rule. During the first year the polynuclears range from 20 to 40 per cent., gradually rising until the twelfth year, after which adult values are obtained. Simon places the percentages in the normal adult as follows:

Small lymphocytes	20% to 30%
Large lymphocytes and transitionals	1% to 6%
Neutrophiles	60% to 70%
Eosinophiles	1% to 4%

Zeit[20] gives the following normal adult percentages:

Small lymphocytes	20% to 30%
Large lymphocytes	25% to 70%
Neutrophiles	60% to 70%
Eosinophiles	1% to 3%

It seems safe to accept 60 to 70 per cent. for polynuclears as a normal standard for the healthy adult, but the possibility of individual variation should always be borne in mind, and in patients not obviously robust an allowance be made of perhaps 5 per cent. each way.

Gibson[21] in his paper upon the application of the dffierential in conjunction with the total count, in the diagnosis of appendicitis, takes 75 per cent. neutrophiles and 10,000 total leucocytes as his basis standards.

We are indebted to Gibson for his work in this field. The greatest value of his paper, however, lies not in his standard chart as given, but in his directing attention to and awakening interest in the differential itself.

Gibson believes that the relative proportion or disproportion between the increase in neutrophiles and the increase in total cells is the important diagnostic factor. His standard chart, while perhaps correct in a majority of instances, is so open to error that it is of uncertain value in practical diagnosis.

Noethen,[22] in reporting the blood findings in seventy-two cases of acute appendicitis in services of Doctors Kammerer, Kiliani and Willy Meyer states that, according to Gibson's chart, six out of fourteen of his cases of diffuse or spreading peritonitis would be adjudged "mild and safe."

Noehren advocates the employment of the differential alone, without regarding the total count, and concludes that *a percentage of 90 per cent. or more neutrophiles indicates a very severe process, that needs immediate operation. A percentage below 78 per cent. indicates a mild or safe process in which immediate operation is not necessarily indicated.* A percentage between the two extremes speaks for

the one condition or the other, according as it approaches the one extreme or the other.

Noehren's findings are additional proof that practically without exception every case of acute appendicitis showing a neutrophilea or over 80 per cent. is serious, and this without regard to the total number of leucocytes present. However, if the patient is resisting, when we find a high neutrophilea, we expect a high degree of leucocytosis, the total leucocytosis being the index of resistance, the neutrophilia being the index of virulency.

If, on the other hand, we find a high neutrophilea with a low, normal or subnormal total count, we are certain that we are dealing with a markedly virulent case in which there is no systemic resistance and we may know positively that the prognosis is bad.

West and others have compared the action of an overwhelming infection upon an individual to a blow upon the head, the patient in each case being stunned, in the latter instance by shock to the central nervous sytem—in the case of the violent infection by the crushing of the organisms reactive power, with consequent failure to produce the antibodes and cells necessary to successful resistance.

In this connection, one other factor should be borne in mind—that is, the transitional leucocyte. Hematologists have stated that transitional leucocytes are but partly formed polymorpho-nuclear neutrophiles, probably a transition form in the evolution of the bone marrow myelocyte or the large mononuclear to the mature neutrophile. The presence of transitionals in the peripheral blood in quantities is an indication that Nature is attempting to produce neutrophiles for some, but reason is unable to form the perfect cell.

A neutrophilic percentage of 40 to 50 per cent., with an increased percentage of transitionals, may show a much graver and more dangerous condition even than the desperate case in which we find a high neutrophilic percentage with a low total count.

In this connection the finding in a case of perforated appendicitis, with diffuse septic peritonitis, illustrate this point (i. e., absence of resistance and reaction).

Total leucocyte count, 6,000.
Small lymphocytes, 30 per cent.
Large mononuclears and transitionals, 30 per cent.
Neutrophiles, 40 per cent.

Another case of fatal diffuse septic peritonitis, in which was found but 7,000 total leucocytes with 92 per cent. neutrophiles, illustrates the first point (i. e., presence of a high degree of reaction, but with no resistance).

The above findings, if laid out on Gibson's chart, would have no significance whatever, yet the meaning of the counts must be obvious to the thoughtful observer.

A consideration of the total count as an index of the patient's resistance, and as a measure of how much help we may expect from Nature in our operative efforts, if taken in conjunction with a study of the differential as a measure of the existence and virulency of the infection, aids us materially, not only in diagnosis and prognosis, but in the determination of operative requirements, and oftentimes may warn us against plunging into a hopelessly fatal operation.

The writer feels particularly fortunate and highly honored in being able to present for the first time the views and conclusions on the subject of "Leucocytes in Appendicitis" of Prof. F. Robert Zeit of Chicago.

Prof. Zeit during the past ten years has closely observed the blood findings in many hundred appendiceal disorders, and has carried the operation findings through bacteriological and histo-pathological examination, thus checking up the initial diagnosis, and as a result has a crystalized knowledge of the subject.

Prof. Zeit speaks not as a surgeon, but with the accuracy and calm reasoning of the scientific hematologist and pathologist.

It is greatly to be regretted that Dr. Zeit has not before this presented his views and deductions in detail. However, he has given the writer, in a series of personal communications, his major conclusions, as herein inadequately portrayed.

In his study of the subject, and during the course of his work with Dr. Zeit, the writer was able to follow Zeit's reasoning by an examination of case histories and blood counts, together with examination of blood slides, gross pathologic specimens and microscopic sections.

In dealing with the leucocytes in disease, Zeit emphasizes the fact, as stated but not applied by most hematologists and surgical writers, that it is the variety of leucocytosis that assists in the differential diagnosis of disease, and that from the total counts alone no positive information is to be gained.

Zeit refuses to work upon assumptions. He must know definitely, first, whether a leucocytosis, if present is physiological or pathological, and if pathological whether eosinophilic, lymphocytic, neutrophilic, myelocytic, or transitional. Knowing the kind of leucocytosis, he bases his diagnostic and prognostic deductions not only upon the immediate size ut the progress of the leucocytosis in question.

He states that, so far as appendicitis is concerned, we are dealing, in a majority of cases, with the pyogenic micro-organisms, and since pus germs and infective processes are chemotaxic to polymorphonuclear cells, it is to variations in the neutrophiles that we must look for information.

Zeit's views on certain phases of appendiceal leucocytosis may be summarized as follows, i. e., *having clinical symptoms of appendicitis and a pathologic pyogenic leucocytosis, as evidenced by the presence of a neutrophilia.*

(1) An increasing leucocytosis indicates a spreading infection.

(2) A high stationary count indicates a partly walled-off abscess, or a stationary infection.

(3) A gradually decreasing leucocytosis indicates a gradually decreasing infection.

(4) A sudden fall in total leucocytes from high to low, with neutrophilia, shows an abolishment of systemic resistance and means impending fatality.

It will be noted that Dr. Zeit finds the greatest value of the blood findings, not in a single examination, but in cases where the blood picture may be followed from hour to hour, or from day to day.

Dr. Zeit distinctly makes the following statement: Having the ordinary clinical symptoms of acute appendicitis, with no leucocytosis, and no neutrophilia, no infection is present, and in 75 per cent. of cases, if the removed appendix be taken through histo-pathological examination, it will show true normal tissue, with no sign of pathologic inflammation.

Zeit is convinced that many cases of so-called catarrhal appendicitis are not inflammations at all, but that the clinical symptoms were due to a colic in a histologically normal appendix, the result an excess of contained mucus or fecal matter.

Zeit, however, recognizes a form of true catarrhal appendicitis, and in this true form he has always found a leucocytosis and a moderate neutrophilia.

He classifies true catarrhal appendicitis as an endo-appendicitis, as evidenced by the demonstration microscopically, of congested vessels, edematous mucosa (exudation of serum), interstitial small cell (lymphocytic) infiltration, immense numbers of goblet cells, distended with mucus in the lining epithelium of the mucosa, and at times a moderate number of red blood corpuscles in the interstitial tissue.

This form Zeit believes to be due to a *non-pus producing micro-organism.*

The writer is convinced, not only from a study of Zeit's data, but from reviews of certain of his own cases, and many of other operators, that, in operating upon cases of acute "catarrhal" appendicitis, surgeons in possibly 50 in each 100 cases, are removing histo-pathologically normal appendices for the relief of symptoms.

It is not beyond the realm of possibility to trace pain, local or referred, to an exaggerated appendiceal peristalsis nor a moderate temperature to colonic disturbance with consequent purin absorption, nor a nausea to a sympathetic nerve reflex.

The removal of a normal "catarrhal" appendix may be justified on prophylactic grounds, but, for the sake of surgical truth, among ourselves at least, we should so designate the procedure.

Dr. Zeit lays stress upon the point that the possibilities for pain and other disturbance in the right illiac fossa are great, and that appendiceal disease is not the only factor to be considered in our dealing with disorders in that locality.

Zeit's views coincide with those of Noehren, in that the higher the neutrophilic percentage the more virulent and extensive is the infection, that a normal neutrophilic percentage shows that there is no active pyogenic process present, and that the severity of the infection may in a measure be gauged by the degree of neutrophilic increase.

He states that the prognosis is always better in pyogenic cases showing a high percentage of total cells (i. e., high resisting powers) than in cases showing pyogenic infection, as evidenced by a neutrophilia, with no or low resistance, as shown by a low total count, and that the prognosis is hopeless in cases showing a low total count, with no reaction, as evidenced by a subnormal neutrophilic percentage with increase of transitionals.

Asked what might be deduced, in a case presenting clinical symptoms of acute appendicitis, from a total count of 15,000 to 20,000, with a *normal* differential count, Dr. Zeit stated that such a blood picture had no significance whatever, that it argued neither for nor against, and that it would undoubtedly be merely a digestion or physiologic leucocytosis. In such a case it would be perfectly safe to assume that no pyogenic process was present.

As an example of non-inflammatory "appendicitis" clinically typical, Zeit cites a blood picture of 40,000 total leucocytes, with 50 per cent, eosinophilia. The appendix in the case was found histologically normal, but with its cavity packed full of oxyuris vermicularis.

Zeit's records of tubercular appendicitis always show a leucopenia, with no neutrophilia. These cases must be classed as chronic forms, and clinically, unless subjected to a secondary pyogenic infection, do not appear acute, or suppurative.

Sub-acute abscesses usually show a total count of from 20 to 50 thousand, with a neutrophilia of from 80 to 90 per cent. In these cases the abscess, while walled off, contains active living pyogenic bacteria.

In the *chronic forms* of appendicitis, in which there is no active pyogenic or acutely inflammatory process, and in old, well walled-off abscesses, Zeit has found few if any blood changes. Many large, old appendiceal abscesses are sterile, the etiologic bacteria being dead.

Since an active infectious process is necessary to the production of a neutrophilic reaction, and a stimulation of systematic resistance toward infection, it is useless to expect, or look for, blood changes in chronic inflammations, and sterile abscesses, but this fact, too, should be borne in mind, that, *if the process is not sufficiently active to produce blood changes, there will also be no acute clinical symptoms.*

In the chronic forms of appendiceal inflammation or abscess we are not dealing with time, a difference of days one way or the

other as regards operative procedures is a matter of little importance, and in these cases we may take our time in making a definite diagnosis, and in planning operative or other relief. The value of the blood picture in these cases lies not in what we find, but in what we do not find.

In any case of appendicitis acute, sub-acute, or chronic, if we find a pyogenic, neutrophilic leucocytosis, we may know positively that we are dealing with an acute inflammatory process, a suppuration, a gangrene, a perforation, or a peritonitis.

On the other hand, in any case of appendicitis, acute, sub-acute or chronic, if on repeated counts we find a normal total number of leucocytes and a normal differential percentage, we may know, positively, *that we are not dealing with an active pyogenic process,* that there is no immediate danger to life, that we need not hurry, but that we may make, at our leisure, a differentiation between a colic, a chronic inflammation, a walled-off small abscess, a sterile abscess, or a tubercular appendix, by other means than the blood pictures.

It is indeed fortunate that the blood examination is most valuable to us, in the very class of cases in which we need it most, and it is almost incomprehensible that, because of a failure to find blood changes in certain chronic conditions, many men should throw the whole subject overboard, and thus deprive themselves of a valuable diagnostic and prognostic adjunct in the acute cases, in which definite and positive information is so necessary, and any assistance so acceptable.

CONCLUSIONS.

1. Because of individual variation in resistive and reactive functions, no absolutely invariable single total amounts, or cell percentages can be laid down as significant of definite conditions.

2. The absolute count of leucocytes, if taken alone, has little value as a means of diagnosis.

3. The greatest value of the blood picture in pyogenic processes lies in observation of the neutrophilic percentage, as a measure of the existence and virulency of the infection in conjunction with observation of the total number of leucocytes as an index of the patient's resistive power.

4. The blood picture, utilized with the clinical picture, usually affords much diagnostic and prognostic aid, even in single examination, but its greatest value is shown when it can be followed from hour to hour or from day to day.

5. The progression or retrogression of an acute infection may be determined by observing the progression or retrogression of the neutrophilic percentage and the total cells.

6. In the average adult 7,000 to 9,000 total leucocytes, and 60 per cent. to 70 per cent. neutrophiles may be accepted as normal standards.

7. An increase in leucocytes above 12,000 is without doubt in all cases a hyper-leucocytosis, either physiological or pathological, and an increase of neutrophiles above 75 per cent. is without doubt a pyogenic neutrophilia in adults.

8. Every case showing a neutrophilia above 80 per cent. has a serious infection, the higher the neutrophilia the more virulent the process, and the higher the total cell count the better is the prognosis.

9. In acute cases showing a virulent infection as indicated by a neutrophilia of 85 to 95 per cent., with no resistance, as evidenced by a low total count, the prognosis is grave.

10. In acute cases showing no reaction, as evidenced by a low neutrophilic percentage, with an increase in transitional leucocytes, and no resistance, as evidenced by a low total count, the prognosis is hopeless.

11. Cases presenting the so-called typical symptoms of acute catarrhal appendicitis, with no hyper-leucocytosis and no neutrophilia, have no infective inflammation, and in a majority of instances are those of mechanical ap-

pendical colic, with possible colonic ptomaine absorption.

12. In any case, acute, sub-acute, or chronic, in which a normal neutrophilic percentage, and no leucocytosis is found, there is no acute infection, there is no immediate danger to life, and there is no necessity for immediate operation.

13. Chronic forms of appendicitis; old, sterile, or *safely* walled-off abscesses produce few if any blood changes.

14. Cases showing a leucocytosis and a neutrophilia require careful watching and immediate attention, and those showing a normal neutrophilic percentage, and no leucocytosis, may be investigated at leisure.

REFERENCES.

1. J. B. Deaver, Appendicitis.
2. Simon—Manual of Clinical Diagnosis. P. 85.
3. Cabot—Clinical Examination of the Blood. P. 94.
4. O. J. West, Laboratory Notes (Zeit. Pathological Laboratory).
5. Holt—Disease of Infancy and Childhood. P. 859.
6. Loc. cit. P. 95.
7. Loc. cit. P. 31.
8. Sahli—Diagnostic Methods. P. 649.
9. DaCosta—Clinical Hematology.
10. Boston—Clinical Diagnosis. P. 137.
11. Emerson—Clinical Diagnosis. P. 571.
12. Arneill, Reference Hand Book of the Medical Sciences. Vol. 5, p. 49.
13. Deaver—Appendicitis.
14. Kelly—Appendicitis. P. 430.
15. Bloodgood, Medical Record, Oct. 20, 1900.
16. Sondern, American Journal of the Medical Sciences, Dec., 1906.
17. Loc. cit. P. 85.
18. Loc. cit. P. 67.
19. Loc. cit. P. 73-77.
20. F. Robt. Zeit—Personal Communication.
21. Gibson—Annals of Surgery. April, 1906.
22. Noehren—Annals of Surgery, Feb., 1908.

URINARY INFECTIONS IN THE PRACTICE OF OBSTETRICS.

CHRISTOPHER TOMPKINS, M.D.

Emeritus Professor of Obstetrics, and Dean of the Medical College of Virginia, Richmond, Virginia.

Competent observers have called attention to infections of the urinary tract, occurring during pregnancy, or following upon labor, and recent literature contains many interesting articles pointing out the great importance of this condition. Nevertheless, sufficient consideration is not yet being paid to this complication, and the majority of the profession do not seem to realize the frequency of its appearance; therefore, we wish to bring the subject again before their notice. We believe that most of these cases are either overlooked or wrongly diagnosed, and we feel that the ease in prophylaxis, and the ready response to early treatment, ought to inspire every one of us to keep this danger constantly in mind.

Clinically there are two well-defined divisions: The first division consists of those cases which occur during pregnancy, and which at first sight appear to be idiopathic; here the infection is a descending one, and is caused by bacteria eliminated through the kidneys. In the second division, we have the infections introduced during or after labor; they start at the external meatus, and are ascending in character.

The two processes are widely different, and a review of the etiology will serve to show that each class has its own definite causative factors.

Etiology.—In all branches of medicine, it is accepted, that any obstruction to the flow of urine will constitute a great predisposing cause for inflammatory changes along the urinary tract, and that in the presence of such an obstruction, bacteria, otherwise harmless, can find a ready foothold. Furthermore, it has been demonstrated that the urine flows from the kidneys under a very low pressure, and that the slightest impediment may be enough to cause a partial retention within the pelvis.

Now, when we consider that the ureters occupy a very intimate relationship with the nongravid uterus, and when we remember that the space between the wall of the true pelvis and the ureter measures only about one inch, it is easy to understand that as pregnancy advances to the point where the body of the uterus rises out of the true pelvis, and is developing in the abdominal cavity, how its borders come nearer and nearer to the ureters, and push them over to the bony superior strait, against which it compresses them. Again, the uterus in its enlargement, pulls upon the ureters, and this has a tendency to flatten their walls, and to diminish their lumen.

That this pressure may be sufficient to obstruct the urine and cause a dilatation of the ureters, is shown by the fact that if the ureters of women dying in pregnancy be examined they will, in the latter months, frequently be found dilated. Where the condition is bilateral, it is the right which attains the greater dilatation; where only one ureter is involved, it is usually the right.

The predisposition for infection to attack the right side rather than the left depends on several factors: In its ascent, the uterus becomes inclined to one side, usually the right, and at the same time, it undergoes some axial torsion from left to right; consequently there

is a tendency to encroach more upon the space occupied by the ureter on the right side, and, besides, the right kidney is anatomically lower, and hence more subject to pressure and traumatism, thus diminishing its resistance and predisposing to infection. Again, as suggested by Meeks, the greater prominence of the right over the left iliac artery, and the greater frequency of the fœtal head in the right oblique diameter, may play a part, especially in the last two months of confinement.

Since the compression of the ureters is etiologically so important, and since the pelvis of the right kidney is affected in over one-half the cases, the explanation is plain as to why nearly all the cases of urinary infection in the course of pregnancy, are cases of right sided pyelo-nephritis, and also why they all develop after the fifth month. With the field prepared for the localization of infection, as described above, yet the presence of bacteria, in sufficient number and virulence, is of course essential, and these arrive from two directions; coming down from the kidney, or traveling upward from the urethra, the first route being the usual one in the vast majority of cases commencing before labor, bacteria being poured out from the kidneys in enormous quantity.

Thirty per cent. of pregnant women will show urine so loaded with micro-organisms, as to give rise to the clinical picture of bacteriuria, an attack of constipation frequently being ample to render the urine hazy with the germs. Here the bacteria are practically always bacilli coli communi, entering from the intestines and passing out through the kidneys; there is generally an excess of Indican present, and the condition clears up promptly with a purgative.

In a very few cases before labor, the gonococcus, if already in the urethra, may avail itself of the impeded flow to ascend the urinary tract. Turning now to those cases which follow labor, we find that the infection consists of the staphylococcus or streptococcus, which has been introduced through the external meatus, and that here, the great predisposing cause is improper technic in asepsis.

Let us always remember that the meatus opens directly on the field of operative work, and furthermore, that the bladder and urethra are subject to unavoidable traumatism and pressure during labor, so that this furnishes a very inviting avenue for infection, if the greatest obstetrical cleanliness has not been employed.

The use of the catheter is another potent source of infection, for the germs being present already or entering during parturition, are apt to be lighted up by a catheter passed with every precaution, because of existing contusion or abrasion.

We should not overlook, too, an infection which passes by way of the uterine lymph channels to the tissures around the kidneys, and is associated with the formation of perirenal abscesses; in pregnancy, these lymphatics are much increased in size, often reaching the magnitude of a goose quill, and they form a plexus under the peritoneum, which is continuous with the general lymphatic system, and anastomoses especially with the perirenal lymph vessels.

Having thus pointed out the methods of invasion, let us see how infections of the urinary tract manifest themselves.

Onset and Symptoms.—Practically all cases, whether ascending or descending, announce their onset by the symptoms of a cystitis; in some patients, where the infection has been introduced through the meatus, of course, a true cystitis is present, but even where the lesion is limited to the pelvis of the kidney, as in most of the pregnancy cases, the first symptoms are usually from the bladder, and consist of a pronounced frequency of urination, accompanied by a slight burning sensation; these symptoms are not due to a cystitis, but are referred from the kidney, the bladder being reflexly stimulated to repeated contractions.

All the cases that I have observed have com-

menced in this way, and have presented their other symptoms in quite regular order; after the cystic manifestations, the patient next complains of headache and dull pains in the back and limbs, followed in a few hours by a more or less severe chill, with high temperature and later sweating.

The chills vary in intensity, and may occur several times a day, every day, or at irregular intervals; at times these chills are quite periodical, resembling malaria.

The temperature does not pursue any typical course, it is generally of an intermittent character, rising sharply and dropping equally so; the subnormal fall is usually very marked. In two recent cases, the rise would began about 11 a. m., and reach its height about 6 p. m., being subnormal again by 10 p. m. On the other hand the rise may be very abrupt, attaining a high mark and being sustained for some days, gradually declining.

The aching and tenderness in loins which accompany the chills and rises of temperature may be insignificant, or may be so severe as to require the use of morphia; when it is sudden and early in appearance, it is due to a contraction of the ureters, trying to force the urine past the obstruction, and this pain will disappear in 48 hours, when the muscular coats are paralyzed.

The signs of urinary toxemia do not show themselves until the inflammation becomes chronic, then delirium, stupor and other symptoms may be alarming, and the patient be gravely ill.

Particular attention has to be paid to the urinary findings, which are fairly constant; first and most important is the presence of a bacteriuria and the test for albumen is generally positive; most physicians will recognize the albuminuria, but will take no notice of the bacteriuria, thus entirely misinterpreting the true condition by attributing the trouble to a renal insufficiency, instead of making a correct diagnosis of urinary infection. Cloudy or albuminous urine in pregnancy should always be investigated for bacteriuria.

The urine is always acid, except in those cases of chronic ascending infection, where the reaction may be alkaline.

Casts are present in proportion to the nephritic involvement, and very significant is the finding of pus in varying quantity, the amount bearing a close relationship to the intensity of the symptoms, thus when drainage is good and urine is full of pus, tenderness and fever are low, but when pus collects in diseased ureter, behind the obstruction, then constitutional symptoms reappear, though urine is voided clear and limpid.

Whenever there are intervals of complete absence of pyuria, it always indicates that one of the ureters is normal, and this is of importance from a prognostic standpoint.

After abdominal or vaginal operations, the surgeon is apt to attribute the symptoms to a pelvic ooze, mild wound infection or to autointoxication from the intestines, and when urinary infection occurs in the course of typhoid, scarlet fever, diphtheria or pneumonia, the medical man, overlooking the complication, will often think that there is present an exacerbation of the original disease. Likewise in the practice of obstetrics, when this condition happens, a mistaken diagnosis is frequently made.

Differential Diagnosis.—Because of the severe chills, many cases are thought to be of malarial origin, but here a blood examination would at once establish the diagnosis; the absence of the plasmodium, the presence of leucocytosis, with a relative increase of the polymorphonuclears, and the resistance to quinine, would dismiss malaria, while the urinary findings and other symptoms would establish the existence of urinary infection.

When the pain in the right loin is very severe, appendicitis might be suspected, and differentiation is made by the history of the case, by the urinary examination, and by the localization of the tenderness, with the absence of

marked rigidity and distention; nausea is a late symptom in urinary infection, while it is an early one in appendicitis.

There is also little doubt that many a case of chills and fever, following labor, is diagnosticated and treated as a uterine infection; the pyelitis pursuing its characteristic course, uninfluenced by the iodine applications, curettements, and irrigations of the long suffering uterus. All temperatures occurring after labor call imperatively for a microscopical examination of the urine, to determine the possibility of an infection of the urinary tract.

The diagnosis is made from puerperal sepsis, by the absence of uterine symptoms, such as fetid discharge, tenderness or subinvolution of the uterus, while the history of the case, and the presence of bladder symptoms will direct your attention towards the true condition.

In three cases which have been seen during the past year, the original diagnoses were respectively, malaria, appendicitis, and puerperal sepsis of a mild character; indeed they simulated these conditions very closely. Salpingitis and perinephritic abscesses are to be recognized by the local signs; typhoid also has to be thought of, but once in mind, the diagnosis is generally easy.

When the obstetrician has recognized the fact that an infection of the urinary tract is at hand, then the course and prognosis of the disease will depend on whether the bacteria are limited to the vesical area, or whether the condition is also present in the ureter, for the symptoms of a pyelonephritis may resemble, and are often mistaken for a true cystitis. In cystitis the urination is very painful, and there is great tenderness elicited by vaginal examination; in pyelonephritis, while there is a marked frequency, there is no real pain on urination, and vaginal examination is painless.

Course and Prognosis.—The prognosis for the child is more serious than for the mother, since, when the infection is accompanied by a very high temperature, particularly if sustained for some days, spontaneous abortion is likely to take place.

For the mother, the dangerous cases are those which are not recognized until uremic symptoms appear, and also those where the infection results from a catheterization, and is progressively ascending in character. The descending infections are less dangerous, and many cases of a mild nature get well in spite of no treatment at all, or else treatment along the line of a mistaken diagnosis, yet it is an unfortunate thing if these mild cases do not receive the proper treatment, for a pyelonephritis may persist without symptoms, for a long time and eventually lead to interstitial changes within the kidneys.

If an infection once gains a firm standing during pregnancy, it can not be entirely cured until after labor has taken place, at which time there is always an exacerbation, but this will subside much more readily than the former attack, and after delivery the urine will gradually clear up. One attack renders the patient more susceptible at a subsequent pregnancy.

Induction of premature labor never has to be performed, except in cases seen very late after the kidneys have become severely damaged, for even the violent infections, if recognized at an early stage, will yield nicely to treatment, if rationally and intelligently administered.

Treatment.—The general management of pregnant and puerperal patients is of great importance; they should receive water in abundance, their diet should always be restricted, their bowels regular, and a careful watch kept for bacteriuria; on its appearance, purgatives and urinary antiseptics will suffice, if administered promptly. If, for any reason, a chronic gonorrhœal infection of the urethra or vagina is suspected, then urinary antiseptics should be given throughout the latter months of pregnancy. We should employ, as a routine prophylactic measure, the administration of some good urinary antiseptic for a few days before, and at least for a week after delivery.

This is particularly urgent if the labor has been a hard one, or if operative work of any kind was resorted to. A careful asepsis during labor and the puerperum is of course essential, together with the avoidance of catheterization if possible; we can often succeed here by allowing the sitting posture, by pushing water freely, by mouth, and by the use of a hot saline enema or douche; a hot water bag over the pubes, and a hyperdermic of strychnine will also help. By such general measures as these the great proportion of cases can be prevented, and those infections which do occur can be greatly alleviated, and the patients can be conducted in safety and comfort to labor; after labor there is usually a flareup, due to the traumatism of muscular exertion. This will yield nicely to treatment, and in some months the patients are cured.

The active treatment for all urinary infections consists of rest in bed, water very freely by mouth, saline enemata as often, and in as large quantities as possible, liquid diet and purgatives.

Urinary antiseptics should be commenced at the beginning, and should be continued for some weeks after all symptoms have disappeared.

Symptomatic treatment is also of service, thus an ice-bag or morphine for pain, cold sponges and an ice-cap for high temperatures; hot water bottles, and hot blankets for the chills, etc.

The efficiency of the general treatment, and the necessity for each one of the measures mentioned is well illustrated by a recent case. A patient with a moderately severe ascending pyelonephritis of gonorrhœal origin had been treated during four weeks for malaria, with a progressive increase in symptoms; when first seen she was very toxic and stupid, with chills and high temperature. Proper treatment being instituted as described above, she cleared up entirely within four days, and remained without any symptoms for seven days, when she was removed from the hospital to a boarding-house. Here there was a renewal of symptoms, apparently due to the exercise incident to moving. These disappeared in two days, and she then went on to full term, a period of over one month and a half, but during this time of waiting she suffered from three slight attacks, brought on respectively by constipation, indiscreet eating, and by letting up on the amount of water she was ordered to drink. The trauma of labor caused a reappearance of symptoms, which came on the second day and lasted for five days. On being moved from the hospital a week later, symptoms again appeared and lasted for three days. After this there was no further return of the condition, and when heard from last, about six months after labor, she was apparently perfectly well.

CONCLUSIONS.

1. Urinary infection is a common complication in obstetrics, and its possibility should be borne constantly in mind.

2. The urine of pregnant women should be routinely examined for bacteriuria, and on its appearance, vigorous treatment should be instituted.

3. Before commencing treatment for temperatures occurring after labor, we should always inquire into the possibility of urinary infection.

4. We advise the prophylactic employment of urinary antiseptics in all cases of labor.

5. The treatment of this complication is eminently satisfactory, and induction of premature labor rarely has to be performed.

BIBLIOGRAPHY.

1. "Genito-urinary Diseases," Keys.

2. "A Text-book of Obstetrics," Edgar.

3. "Pyelonephritis of Pregnancy," Cumston, *Am. J. Med. Sciences,* Vol. CXXXI.

4. "Pyelitis in Pregancy," Cragin, *Surg. Gynec. and Obs.,* May, 1906.

5. "Pyelonephritis in Pregnancy," Ruppaner, *Munich. Med. Woch.,* Feb., 1906.

6. "Pyelitis Complicating Pregnancy," Meeks, *Am. J. Obstet.,* Feb., 1907.

7. "Pyelitis Complicating Pregnancy," Spalding, *Am. J. Obstet.,* 1907.

RENAL TUBERCULOSIS.

BY LE GRAND GUERRY, M.D., COLUMBIA, S. C.

We will have time only, in this short paper, to bring before you some of the most salient features of renal tuberculosis. There is scarcely a more engaging subject in the whole field of modern surgery than the one under consideration. The interest in the disease is rendered more intense by the fact that when full advantage is taken of the modern aids to its diagnosis, in a great majority of cases, it can be worked out with remarkable accuracy. Under the influence of modern research and investigation most, if not all, of our preconceived ideas about tuberculosis of the kidney have changed. Walker states emphatically that there are three ways in which infection takes place; first, and by far the most frequent, through the blood current; second, by extension from surrounding parts, tuberculosis of the spine, for example; third, by extension upward from the bladder. The last mode of infection, which was thought formerly to be the most common, is now not only known to be extremely rare, but thought by many competent observers, never to exist. The evidence before us is that it does occur in exceptionally rare instances. Of fundamental importance is the fact that in the great majority of cases the disease is not only unilateral, but that it is primary in the kidney in so far as the genito-urinary tract is concerned; and, on the other hand, it is probably always secondary to tuberculosis elsewhere in the body. This question at once arises and demands answer. If tubercular lesions are arrested elsewhere in the body by hygienic and dietetic measures, why not in the kidneys? Senator says, "When renal tuberculosis is not amenable to surgical treatment, we know of no other termination than death; at least recovery must be rare." It appears, after a careful study of this subject, that the tendency of this disease in the kidney is never toward healing; the knowledge before us now that the disease is nearly always hæmatogenous in origin; that it is nearly always primary in the kidney; that in the great majority of cases it is unilateral, and that from fifteen months to two years will elapse before the second kidney is involved, places at once the operation of nephrectomy on a sound and solid surgical basis. Not only this, it urgently demands an early diagnosis leading to radical relief before the bladder becomes extensively involved. We quote the following: "In fact, radical removal seems to be the only treatment for this condition, offering hope of a permanent cure. Spontaneous healing of tuberculosis of the kidney, unlike tuberculosis in the various other organs, appears to be extraordinarily rare, if not unknown. Conclusive cases are lacking in the literature. More light is greatly needed on the subject. It seems pretty generally agreed, however, that hygienic measures, which are so valuable in treating tuberculosis situated elsewhere in the body, seem least effective in arresting the process when in the kidney. Why this should be is hard to tell. I have seen at least one striking case of it in a young woman whose pulmonary disease had become arrested by sanatorium treatment, while the disease in the kidney and bladder was progressing rapidly."

The diagnosis is easy in the advanced stage, when one finds a palpable tumor, pain in the side, fever, hæmaturia, frequent micturation, and the urine loaded with pus and kidney debris, and also marked emaciation. I wish here to emphasize the point that one of the most common sources of error in diagnosis is in al-

lowing the severe bladder symptoms to draw our attention from the real source of trouble. Says Walker, "It should be emphasized that where we have frequent micturition with purulent urine, which cannot be explained by any urethral infection, tuberculosis of the kidney (not of the bladder), should, at least, be suspected." We would add, considered tuberculosis until the contrary is proven. We have seen then that the question of diagnosis is the chiefest concern when we have fewest symptoms, possibly only frequent micturition and slight hæmaturia. Given a patient then presenting the very early symptoms above mentioned, we would proceed as follows. After a most careful taking of the history, we obtain, first, a specimen of urine for microscopical examination, the specimen must be taken by catheter to avoid confusion with the smegma bacillus; if the disease is tuberculosis, the bacilli is practically always found; it is advisible to find out how much urine is secreted in twenty-four hours; next, a careful cystoscopic examination is made, the evidence often afforded by this simple measure is conclusive; if we find perfectly clean urine coming from one kidney and purulent urine from the other, and if after thorough study of the mixed specimen we find sufficient urea output, we are justified in advising nephrectomy. The next step, when the above is not sufficient, is to catheterize the ureters; by this means the most conclusive evidence is formed. We believe the danger of ureteral catheterization fanciful rather than real, and unhesitatingly advise it whenever the slightest doubt exists; the separately collected specimens, after careful chemical, microscopical and bacteriological search, will in most instances, settle the diagnosis. The inoculation of guinea pigs with tubercular urinary sediment is one of the most valuable and reliable diagnostic signs, but the objection here is the time consumed—about four to six weeks. We have had no experience with the newer phloridzin test and cryoscopy; they are both valuable additions to our methods of diagnosis, and in certain cases afford valuable information. Says a recent writer, in speaking of the ureteral catheter, "It gives me at the same time information as to the patency of the ureter and frequently as to its dilation. Naturally, we must rely chiefly on a careful examination of the urines so delivered, and no means which may give us information in this respect can be neglected. Where possible cryoscopy and the estimation of sugar after the injection of phloridzin should be carried out, but we can support Rovsing, who lays chief stress on the specific gravity, the urea determination and proper microscopical examination. It is, in short, the ureteral catheter rather than the so-called functional diagnosis which has led to the present improvement in renal operative statistics."

To recapitulate: A disease nearly always hæmatogenous in origin.

A disease always primary in the kidney in so far as the genito-urinary tract is concerned.

A disease which is unilateral in the beginning.

A disease in which from twelve to twenty months will elapse before the second kidney is involved.

A disease, which, in the kidney, at least, invariably, leads from bad to worse.

A disease, which, when studied intelligently and in conjunction with the modern methods and means at our disposal, can be early and accurately diagnosed.

A disease under the above circumstances splendidly curable by radical removal of kidney or kidney and ureter.

A disease in which no other treatment than surgical offers any relief.

Here, again, surgery is winning the fight by the brilliant way in which she is marshaling her accumulated facts with telling force.

EDITORIAL

ADVERTISING IN MEDICAL JOURNALS.

This Journal desires to extend greetings to the Old Dominion Journal of Medicine and Surgery, recently reorganized under new management entirely, for the position it has taken in reference to advertisements of patent and proprietary medicines, feeling that a strong sister journal working practically in the same field with them can be of great help to each other in the determined effort to stamp out any questionable advertisements. While it is true that the means for the support of a journal can be derived only from two sources, namely, subscriptions and advertising matter, yet, we felt in the organization of this journal that there were enough men with high ideals in the South to support a journal giving essentially good reading matter without polluting its pages with questionable advertisements, and we are glad to say, from the encouragement we are receiving daily in the form of new subscriptions that we feel our judgment was not misplaced, and this journal will continue to take no advertisements of questionable character. This is a determination which will not change with time, even though a loss must be sustained by the editorial staff.

Many years ago in an address on General Medicine, before the American Medical Association at Atlantic City, the editor-in-chief sounded a note of warning to the profession against the controlling influence of proprietary medicine manufacturers, and the seed sown at that time has borne fruit in many ways. Until now the Council on Pharmacy and Chemistry of that association stands as a barrier to the entrance into ethical journals of any proprietary article that may not bear the stamp of its approval. Thus, we hail the entrance of our new sister in this field of high ideals, and bid her God-speed, wishing for her long life and prosperity.

INTERNATIONAL CONGRESS ON TUBERCULOSIS.

This Congress convenes in Washington, D. C., on September 21, and will remain in session until October 12.

The fact that this disease is the most widespread and destructive agency of death to all mankind in all climates and among all nations, renders this meeting of peculiar importance, especially to the South, because of the large negro population with their careless and indifferent habits as to hygiene and sanitation, and the fact that they are with us to stay always as a menace unless thorough legislative control can be had over this infectious disease. This would seem to make it imperative that every State in the South send a large delegation to this meeting—the success of which will be largely determined by the number in attendance. Too much cannot be said in commendation of the great work of Dr. Lawrence Flick in this connection, recent reports showing that in Pennsylvania there has been a falling off of over 5,000 in the death rate from this disease. This would tend to impress upon the profession as well as the laity that great things can be expected from co-operation and a determined effort on the part of the profession and the people. The disease, the cause of which is well known, and its method of propagation, and of gaining entrance into the human body so well understood that it would seem a reflection that this great

scourge to mankind should continue its death-dealing, destroying influences even in this enlightened day of preventive medicines.

When the people have been thoroughly educated and awakened to their own danger and taught to know that consumption is a transferable disease usually transmitted through house infection, and that by the destroying of the germs in the sputa of any infected person immediately and the proper laws enacted and enforced, the mortality rate from this disease, which is now about 10 per cent. of all deaths, can be lowered, and so many precious lives be saved that no effort is too great and no task too laborious for the profession to undertake in the protection of the lives properly in their care. We certainly hope that the readers of this journal will in so far as it is possible, be in attendance at this meeting, making it a greater success if possible than the Congress in 1905, which met in Paris.

The membership fee is only $5. By writing to Dr. John S. Fulton, Secretary-General, Washington, D. C., all information in regard to the coming congress can be obtained.

BUREAU OF PUBLIC HEALTH.

It is with great pleasure we note that both political parties have endorsed the establishment of a Public Health Bureau under a competent head with government aid and great facilities for dealing with all matters pertaining to the sanitation or the prevention of diseases from a national standpoint. We are convinced that this is the only means by which great good can be accomplished. So long as the Boards of Health are local and political in their character, operated independent of other Boards, just so long will there be dissension, lack of cooperation, and naturally very little accomplished, but if a properly organized Bureau of Health from the Central Government takes charge of the great question of the health of the people it is an assured fact that the great epidemic diseases which have heretofore been imported into our borders can no longer gain entrance or a foothold on American soil.

We desire to go on record strongly endorsing this Bureau of Health, and would suggest that the medical profession throughout the South see their Congressmen and Senators on behalf of this Bureau that its establishment may be assured.

We wish to acknowledge our error in the publishing of Dr. Matas' paper in our August Journal, the following being omitted:

"Remarks introductory to a series of demonstrations on the cadaver, and with the stereopticon at the meeting of the Southern Surgical and Gynecological Association, held in New Orleans, December 17-19, 1907."

We do this in justice to Dr. Matas.

PROGRAM OF THE SURGICAL SECTION OF THE INTERNATIONAL CONGRESS ON TUBERCULOSIS TO BE HELD IN WASHINGTON CITY, SEPTEMBER 28-OCTOBER 3

The Secretary of the Surgical Section, Dr. W. D. Haggard, has sent the following program, which is the preliminary statement of the papers and discussions to be held at the Congress on Tuberculosis. There will be a very large attendance, as there are over 2,500 paid active members, and it is believed that the approaching Congress will exceed the European countries in showing what America can do in the way of handling a World's Parliament in the study and investigation of the greatest and most dreadful of all diseases. The list of papers herewith presented show the wide range of subjects to be considered, and will doubtless attract a large attendance. The meetings are open to the laity, but, of course, are more especially attended by the profession, all of whom are cordially invited to participate in the Section meetings:

MONDAY.

Hospital Construction. Paper read by Mr. Meyer J. Sturm, Chicago, Ill., "Construction of Hospitals for Tuberculous Patients." Discussion to be opened by Dr. F. Gallagher, El Paso, Tex.

Tuberculous Laryngitis. Paper by W. E. Casselberry, Chicago, Ill., "Tuberculosis of the Larynx: the Type which is Capable of Recovery, and the Principles of Treatment."

Tuberculosis of the Eye and Lids. Papers by Chas. A. Oliver, Philadelphia, Pa., "A Brief Note upon the Value of the Ophthalmic-Tuberculin Test in the Question of Surgical Treatment of Orbital Disease."

Dr. Sydney Stephenson, London, "Tuberculosis of the Choroid."

Dr. Oscar Dodd, Chicago, Ill., "Tuberculosis Affecting the Cornea."

Discussion to be opened by Dr. F. H. Verhoeff, Boston, Mass.

Tuberculosis of the Ear. Paper by Dr. Clarence J. Blake, Boston, Mass., "Tuberculosis of the Ear."

TUESDAY.

Tuberculous Adenitis. Papers by Dr. Chas. H. Dowd, New York City, "Tuberculosis of the Cervical Lymph Nodes. Report of 275 Cases Treated by Radical Extirpation."

Mr. H. J. Stiles, Edinburgh, Scotland, "Tuberculous Glands in Children."

Dr. C. F. Painter, Boston, Mass., "Retroperitoneal Tuberculous Glands and Their Relation to the Spinal Symptoms."

Dr. Cazin-Chef, Paris, France, "Traitment des Adenitis Tuberculeuses."

Tuberculosis of the Lungs and Pleura." Papers by Dr. S. Robinson, Boston, Mass., "Tuberculosis of the Lungs and Pleura."

Discussion opened by Dr. F. F. Murphy, Boston, Mass.

Prof. Sauerbruch, Marburg, Germany, "Surgical Tuberculosis of the Lungs."

Tuberculosis of Skin and Appendages. Paper by Dr. Wm. Rodman, Philadelphia, Pa., "Tuberculosis of the Breast."

Discussion opened by Dr. A. O. J. Kelly, Philadelphia, Pa.

WEDNESDAY.

Tuberculous Bones and Joints. Paper by Dr. Stephen H. Weeks, Portland, Me., "Tuberculous Arthritis of the Hip Joint."

Paper by Dr. H. Agustus Wilson, Philadelphia, Pa., "The Treatment of Tuberculous Hip Disease by Weight-bearing and Fixation by the Loring Short Hip Spica."

Paper by Dr. Horton F. Shaffer, New York City, "The Question of Non-Interference in

the Passive Abscesses of Tuberculous Joint Disease."

Paper by E. H. Ochsner, Chicago, Ill., "Vaccine Therapy in Joint Tuberculosis."

Paper by Dr. D. A. Codvilla, Paris France, "Indications for Operative Treatment of Bony Tuberculosis."

Paper by Dr. D. A. Codvilla, Paris, France, "Tuberculous Arthritis of the Knee Joint."

Paper by Dr. A. Jeanne, Rouen, France, "Tuberculous Medioe-Tarsienne et Pied Plat."

Paper by Dr. Nove Josserand, Lyon, France, "De la Methods de Mosetig Dans "Traitment de la Tuberculose du Testicles."

THURSDAY.

Tuberculosis of the Prostate, Vas, Epididymis and Testicle. Paper by Dr. John D. Walker, New York, N. Y., "Tuberculosis of the Vas, Epididymis and Testicle."

Discussion opened by Dr. W. E. Lower, Cleveland, Ohio.

Tuberculosis of the Bladder. Paper by Dr. Wilhelm Karo, Berlin, Germany, "Tuberculosis of the Bladder."

Paper by Dr. Bransford Lewis, St. Louis, Mo., "Tuberculosis of the Bladder."

Discussion opened by Dr. Guy L. Hunner, Baltimore, Md.

Tuberculosis of the Kidney. Paper by Dr. Arthur Dean Bevan, Chicago, Ill., "Tuberculosis of the Kidney."

Paper by Dr. Ramon Guiteras, New York, N. Y., "Tuberculosis of the Kidney—A Preliminary Study."

Tuberculous Intestines and Appendix. Paper by Prof. Henri Hartman, Paris, France, "Tuberculosis of Intestines and Appendix."

Paper by Dr. D. N. Eisendrath, Chicago, Ill., "Acute Forms of Abdominal Tuberculosis."

Discussion by Dr. Gregory Connell, Oshkosh, Wis.

Tuberculous Uterus and Adnexa. Paper by Prof. Samuel Pozzi, Paris, France, "Tuberculous Adnexa."

Discussion opened by Dr. I. S. Stone, Washington, D. C.

Tuberculous Peritonitis. Paper by Dr. J. B. Murphy, Chicago, Ill., "Tuberculous Peritonitis."

Discussion opened by Dr. F. B. Lund, Boston, Mass.

Tuberculosis of Testicle. Paper by Dr. Chas. Esmonet, "Experimental Testicular Tuberculosis."

Paper by Dr. Cazin-Chef, Paris, France, "Traitment de la Tuberculose du Testicles."

FRIDAY.

Surgical Tuberculosis. Paper by Dr. R. W. Philip, Edinburgh, Scotland, "Surgical Bearings of Tuberculosis."

Paper by Dr. E. H. Bradford, Boston, Mass., "Surgical Tuberculosis."

Paper by Dr. Emil G. Beck, Chicago, Ill., "The Prevention, Diagnosis and Surgical Treatment of Tuberculous Sinuses and Abscess Cavities."

Outdoor Treatment of Surgical Tuberculosis. Paper by Willy Meyer, New York City, N. Y., "The Value of Fresh Air in Conjunction with Artificial Hyperemia in the Conservative Treatment of Surgical Tuberculosis."

Paper by Dr. Arthur J. Gillette, St. Paul, Minn., "The Importance of, and How the State of Minnesota Cares for its Indigent Children Suffering from Tuberculosis of the Bones and Joints."

Paper by Dr. De Forest Willard, Philadelphi, Pa., "Outdoor Treatment of Surgical Tuberculosis."

Paper by Dr. Rollier, Leysin, Switzerland, "La Cure D'Altitude et la Cure Solsire de la Tuberculose Chiruricale."

Tuberculosis of the Muscles, Fascia and Tendons. Paper by Dr. James F. Mitchell, Washington, D. C., "Tuberculosis of the Muscles, Fascia and Tendons."

Tuberculous Liver, Gall Ducts, Pancreas and Stomach. Paper by L. W. Hotchkiss, New York City, "Tuberculosis of the Gall-Bladder, Pancreas, Stomach and Liver."

Discussion opened by Dr. George W. Crile, Cleveland, Ohio.

Tuberculosis of the Spine. Paper by Dr. Henry W. Franenthal, New York, N. Y., "Rational Spinal Support."

Surgical Tuberculosis. Paper by Dr. Gualano,"Clinical Contribution on the Pharmotheraphy in the Surgical Tuberculosis by Hypodermic Treatment."

REPORT OF CASES

A CASE OF ACUTE POLIOMYELITIS ANTERIOR.

BY THOMAS WEAVER, M.D., NASHVILLE, TENN.

Miss M. L. K., aged 16 years, had always been a strong, vigorous girl, and had never been seriously ill. While on a visit to friends in town she noticed a pain in the back, though it was not severe enough to interfere with her visit. On Saturday, June 13, she returned to her home in the country, and complained to her mother of pain in the shoulders, and after walking out into the yard in the afternoon she spoke of being very tired. No importance was attached to the pain, as she spent the afternoon in reading. Just before retiring that night she washed her head and went to bed with her hair damp, and slept near a window, though the shutters were closed and she was apparently not exposed to a draught. Towards morning she was awakened by a severe pain in the head, neck, back and shoulders, her suffering being so severe that her sister, whom she awakened, found her in tears. Her temperature at this time was 100 2-5°, and her mother gave her broken doses of calomel, thinking she had probably taken cold. There was no nausea before she took the calomel, and she ate a piece of candy in the morning, but later there was nausea and loss of appetite. At this time there was no loss of power in her arms or legs, nor on the following day, when she walked across the room several times to the commode.

This she continued to do until Wednesday afternoon, when her mother noticed that she walked feebly, but as the calomel had acted freely, she attributed it to faintness from this cause. At about four o'clock Wednesday afternoon, after using the commode, she was unusually helpless, and when she had with much difficulty succeeded in getting back into bed, she asked her mother if she had a bed-pan, saying that she did not think she could get up again. She was still able to use her arms, however, and on Thursday brushed her teeth.

I saw her the first time at about noon on Wednesday; her temperature at this time was 101 2-5°, and pulse 120. She seemed very much prostrated though the nausea had ceased, and complained constantly of a pain in her head. There was also pain in the neck and back, and she was generally uncomfortable, though there was no tenderness on pressure over the spine except possibly a little over the lumbar region. Her tongue was furred, and there was complete loss of appetite. While her appearance generally indicated a serious illness, I did not at this time recognize her true condition; for though her mother spoke of the difficulty of turning her in bed, she attributed it to the weakness, and her prostration was so extreme that I accepted this explanation. The respiration did not at this time attract my attention, and it was not counted. On Thursday her condition was pretty much the same as on Wednesday. Friday morning I again saw her; at this time her temperature was 101 2-5°, pulse 120, and respiration 45. The tongue was still much furred, the abdomen was distended and somewhat tender, the headache was rather less, and she had passed a more comfortable night, though it was necessary to give her an opiate, as she was constantly asking to be turned and

seemed generally uncomfortable. There was no tenderness upon pressure over the spine, but upon raising her in bed she complained bitterly of pain in the back, saying it hurt her "all over." The paralysis at this time was quite extensive, involving both arms and both legs. There was almost complete loss of power in the muscles of the shoulders, though she could, with difficulty, raise and flex her hands, the left having a little more power than the right. Paralysis of the muscles of the neck was marked, the sterno-mastoids being entirely powerless. There was no impairment of the facial muscles. In the lower extremities loss of power was complete from the hips down, except that flexion and extension of both feet remained. The respiratory muscles were likewise involved, and respiration was wholly abdominal.

The bowels became constipated, and there was retention for 36 hours, but the bowels were moved by an enema, and she then voided her urine, and there was no further retention.

On Saturday, Dr. W. H. Witt saw the case with me and confirmed my diagnosis of acute poliomyelitis anterior. The temperature was now normal, pulse 112, and respiration 47. Dr. Witt noticed that the respiratory sounds were more distinct on the left side. She was now more comfortable, though she had not passed a good night, as she was constantly asking to be turned. Her condition was unchanged on Sunday, but when I saw her Monday morning I thought once there was some intermission in the pulse, but afterwards decided I was mistaken. Monday night the patient's mother telephoned me that her pulse was very irregular, and that there were frequent intermissions. On Tuesday morning I was again called by telephone and was told that my patient was in a desperate condition. I saw her shortly after eight o'clock and found her markedly cyanosed; the respirations were shallow, and confined to the left side; the pulse was 150, but strong and regular, and she was partially unconscious. At about half-past eleven I again saw her; the cyanosis had now deepened, the pulse was still 150, but much feebler in volume and the vaginal temperature 102 2-5°, loss of consciousness was complete, and death occurred at half-past twelve.

Summary.—The unusual features of this case might throw some doubt on the diagnosis, yet after a thorough examination and due consideration of meningitis, multiple neuritis or other conditions we were of opinion that it could only be poliomyelitis. The following points are of interest in this case:

1. Age of patient, 16 years, 7 months. The great majority of cases occur between the first and fourth year (Starr).

2. Gradual onset of paralysis, which is usually abrupt, and the long prodromal period, patient complaining of pain in the back about a week before the onset of paralysis.

3. Widespread distribution of the paralysis; loss of power was more or less complete in both arms, both legs and the muscles of the neck and shoulders and accessory neurosis of respiration.

4. Fatal termination. Prognosis as regards life is usually good in sporadic cases.

5. Death on the tenth day from paralysis of the respiratory muscles; a number of cases have been reported in which death was due to this cause.

6. Pain. This was the first symptom noted, and with the onset of fever it became very severe. It persisted more or less almost to the end. This symptom is not infrequently absent entirely.

7. The marked prostration and depression which were present throughout the illness. The patient was an exceedingly bright and vivacious girl, of most pleasing manner, but her mother tells me that from the day she was first taken sick she never once smiled. I do

not recall any special mention of this symptom in the case reports I have read.

BIBLIOGRAPHY.

1. Collins and Romeiser, Jour. of the Am. Med. Assn., Vol. 1, No. 22.
2. Holt, Diseases of Infancy and Childhood.
3. Osler, Practice of Medicine.
4. Sachs, Nervous Diseases of Children.
5. Sinkler, Cyclopedia of the Diseases of Children, Vol. III.
6. Starr, Allbutt's System of Medicine, Vol. VII.
7. Starr, American System of Practical Medicine, Vol. IV.
8. Starr, Jour. of the Amer. Med. Assn., Vol. Li, No. 2.

A CASE OF CONGENITAL PYLORIC STENOSIS AND A CASE OF CONGENITAL PYLORIC SPASM.

BY S. M. BLOOMSTEIN, M.D., PROFESSOR OF PEDIATRICS, UNIVERSITY OF NASHVILLE, NASHVILLE, TENN.

Since these allied and closely associated conditions are assuming a prominent place in literature, and are receiving no little attention at present from pediatricians, I wish to submit the following cases:

Case 1. Congenital Pyloric Stenosis.—Baby S., age 2½ weeks; seen in consultation with Dr. Joseph Dozier. Parental history, negative; only child; born at full term; difficult instrumental delivery; weight, eight pounds; breast fed, physical condition, good; well until the second week, when vomiting began, with no apparent cause, and was manifest after each feeding, occasionally returning more than was taken at a single feeding. Constipation marked. Physical examination revealed emaciation, and marked peristalsis in epigastrium, beginning under the left costal margin and extending toward the pylorus, and especially noted after feeding, which was followed in a short while by projectile vomiting. A small rounded tumor could be felt in the region of the pylorus, which extended downward toward the umbilicus. Upon these symptoms a diagnosis of congenital pyloric stenosis was made. Purgatives proved of little value. Modified cow's milk was substituted for the breast without improvement. Mellin's Food, diluted with water, met the same fate. Vomiting continued associated with a progressive loss of weight. Death took place at one month of age, operation having been advised and refused.

Case 2. Congenital Pyloric Spasm.—Baby B., age 2 weeks; first child; seen in consultation with Dr. J. P. Keller. Family history negative. At birth weighed 10 pounds; breast fed; thrived until end of the second week when vomiting set in, which was projectile in character, occurring after each feeding. Hunger was present at all times. Constipation was marked, although dark, bilious, slimy stools were passed after a vigorous purge. Loss of weight was evident. Physical examination revealed quite distinct peristalsis in the epigastrium extending from left to right. No pylorus could be felt.

Believing this to be a case of pyloric spasm a change of diet was instituted and a wet nurse was substituted for the mother's milk, without improvement—when peptonized modified cow's milk was tried, notwithstanding which the vomiting and other distressing symptoms continued.

Lavage proved of no value. A change to the country with a return to the mother's milk was accompanied by some improvement. The vomiting became less frequent, only occurring at intervals of 24 to 36 hours, and the bowels began to act daily. Present weight is only 8½ pounds, although the general condition is much improved.

HISTORY AND BIOGRAPHY

DR. T. E. SCHUMPERT.

Thomas Edgar Schumpert, the only child of Dr. John Ira and Mrs. Mary Pauline (Holt) Schumpert, was born forty-five years ago in Bethany, Caddo Parish, Louisiana.

A common school education was followed by two years at the Louisiana State University. He began the study of medicine under Dr. David Y. Yandell, a noted surgeon of Louisville, and in 1884 graduated with distinction from the University of Louisville. For a while he practiced in his home town, but later formed a partnership with the Dr. Yandell and moved to Louisville. However, his health showed early evidences of decline and he returned to his native state, rather to Texas, where he was associated with Dr. O. L. Abney.

The field here, though, was too narrow and on being tendered the position of house surgeon for Allen's Infirmary he gladly accepted. His ability as a surgeon was plainly displayed and won for him the place of first assistant surgeon to the Charity Hospital. So satisfactory were his services that the Board of Trustees unanimously elected him house surgeon at the next annual meeting. While at the head of the surgical staff of this great institution he successfully ligated the subclavian artery, winning thereby national and international reputation. There is scarcely an operation of any character which he did not at one time or another perform, the most intricate of all being the stitching of a man's heart wounded by a pocket knife cut. In his practice he operated a large number of appendectomies with the exceedingly low death rate of less than three per hundred.

Early in 1898 his services were sought by so many privately that he opened the Schumpert Sanitarium in Shreveport. Its growth was rapid, necessitating in a short time the removal to more commodious quarters. These in turn had to be vacated on account of lack of room and the spacious building now occupied was purchased, the name of the institution meanwhile being changed to the Shreveport Sanitarium. The demands upon his time forced him to resign the Charity Hospital in 1899 and give his attention solely to the Shreveport Sanitarium where, surrounded with trained nurses and competent assistants, he was in a position to give a service second to none.

It was here, in his own building, that he passed his last days. After a confinement of less than half a month, constantly attended by a devoted father, diligent physicians and nurses, he suffered from a severe hemorrhage, due to typhoid fever, on May 15, 1908, and breathed his last.

It is doubtful if any other physician has done more for the profession in Louisiana than this man. He was born with superior powers and great physical endurance, yet rose to fame through the genius of labor. His life and soul were in his work and from the treasury of books and nature he had a mind stored with a rich array of wealthy thought.

He was an active member of the various medical associations, both local and otherwise, and held important offices in more than one, among these being the presidency of the Louisiana State Medical Society in 1901, and vice-presidency in the Tri-State Medical Society, of which organization he was one of the founders. He enjoyed the distinction of being chief surgeon to the Louisiana Railway and Navigation Company, division surgeon to

the Kansas City Southern, and local surgeon to a number of others.

In 1903 he was chosen vice-president of the State Board of Health and two years later was made president of the Shreveport City Board of Health. In 1903 also he joined with several others in establishing the *Medical Recorder,* holding the office of vice-president of the company until his death. Only a few months ago he accepted the invitation to become one of the collaborators to the Southern Medical Journal. His contributions to medical literature have been numerous.

Dr. Schumpert was prominent in almost every local enterprise looking to the upbuilding of Shreveport, and in the course of his life-time accumulated a handsome competency. At his death he bequeathed to the Sisters of the Incarnate Word the Shreveport Sanitarium, and the residue of his estate, which will amount to more than one hundred thousand dollars, with the understanding that the Sisters are to add one hundred thousand dollars and erect a modern institution, in every respect, to be known as the Schumpert Memorial Sanitarium. Thus has he perpetuated his memory.

OSCAR DOWLING, M.D.

ABSTRACTS OF CURRENT LITERATURE

MEDICINE

PRIMARY TUBERCULOSIS OF THE MESENTERIC GLANDS.

(By Alfred F. Hess, *American Journal of Medical Sciences,* August, 1908.)

Hess prefaces his report of 3 cases of primary mesenteric tuberculosis by reviewing the previously reported cases in which the types (human or bovine) of infecting organism has been isolated.

He found 71 cases. In 44 of these cases (62 per cent.), the bacillus was of the bovine type. Of these 44 cases 41 occurred in children, three in adults. Of the 27 cases in which the human type of bacillus was isolated, 18 occurred in children, 9 in adults. Although these figures are of no value in determining the relative frequency of mesenteric gland infection in adults and children, they emphasize the importance of the mesenteric glands as a portal of entry.

The large number of cases with bovine infection in children cannot be attributed to their exposure to infected milk alone, as adults in a number of years must be similarly exposed, but he thinks we must admit a diminished resistance on the part of the child or a degree of immunity towards the bovine bacillus on the part of the adults. The course of the disease in both types of infection is the same. He emphasizes the importance of careful microscopical examination of the glands as animal inoculation with glandular tissue have proven negative, even though tubercle-bacilli has been found in these glands in some instances in large numbers. He concludes by reporting three cases of primary mesenteric tuberculosis—one in a child 3 years, 9 months, one in an infant 22 months, and one in a boy of 17 years. All these were instances of infection by the human type of bacillus, as shown by the morphology cultural characteristics, and virulence of the isolated strains.—(W. C. D.)

MORPHOLOGY OF THE BLOOD IN PERTUSSIS.

(Joseph M. Barach, *Archives of Internal Medicine,* July 15, 1908.)

Barach reviews the literature on this subject from the time Frolich of Breslau called attention to it in 1897. From this review he concludes that in pertussis there is a leucocytosis due to the lymphocytes, which begins in the catarrhal stage of the disease, reaches its height in the paroxysmal stage, and gradually subsides with the improvement of the clinical symptoms. Complications may or may not change the blood picture. Most of the authors reviewed think the blood picture of value in making an early diagnosis.

Barach has carefully studied the blood of fifty cases of pertussis and gives the tabulated results in the first thirty cases that came under his observation. He made control examinations of 29 normal children living under the same conditions as the children with the disease. In these and the children with the disease digestive leucocytis was excluded. The averages in these 29 normal children were as follows: Total leucocytes, 10.567; Polynuclears, 55.74; Small Lymphocytes, 35.92; Large Lymphocytes, 4.06; Transitionals, 0.54; Eosinophiles, 3.7.

In the thirty cases with pertussis—at the

onset of the disease, the blood examination being made in the first week of the coughing, the averages were: Total Leucocytes, 17.539; Polynuclears, 50.06; Small Lymphocytes, 40.-19; Large Lymphocytes, 5.02; Transitionals, 1.42; Eosinophiles, 3.02.

At the height of the disease the averages were: Leucocytes, 22.512; Polynuclears, 38.-06; Small Lymphocytes, 51.52; Large Lymphocytes, 6.10; Transitionals, 0.78; Eosinophiles, 3.56. The counts when the patients showed marked clinical improvement averaged as follows: Leucocytes, 10.451; Polynuclears, 49.5; Small Lymphocytes, 39.61; Large Lymphocytes, 5.1; Transitionals, 1.21; Eosinophiles, 5.35.

Eight months later, when the children were in good health the averages were: Leucocytes, 10.355; Polynuclears, 58.0; Small Lymphocytes, 32.0; Large Lymphocytes, 4.0; Transitionals, 1.0; Eosinophiles, 5.0.

The children in both the control series and those with the disease ranged in age from 1½ to 7 years. One adult, a lady 72 years of age, was included in the 30 cases with whooping cough. She had no leucocytosis, but an increase in the small lymphocytes. In addition to the cells mentioned above in the differential counts he notes mast cells never exceeding 4 per cent. He also mentions bilobate, small lymphocyte, degenerate large lymphocytes and an occasional myelocyte. Four of his cases were complicated by pneumonia. When this occurred the polynuclears became the prominent cells; when the pneumonia subsided, the leucocytes fell, and lymphocytes increased in number returning to the pertussis formula. After his study of these cases he concludes that early in the disease there is a leucocytosis in which all forms are increased. Then there is a small cell lymphocytosis, which increases after the other forms have reached their limit. The large lymphocytes follow the small ones, but reach their limit after the small ones have reached theirs. With the patient's improvement the leucocytosis decreases, the lymphocytes diminish and the polynuclear cells gradually resume their normal proportions. During the decrease of the leucocytosis and the lymphocytosis an eosinophilia occurs lasting a variable time, after which the blood picture regains the normal.

The height of leucocytosis is reached during the paroxysmal stage, and the sickest children as a rule show the highest leucocytosis. He thinks the results are uniform enough to prove their value as a diagnostic measure and to clearly establish the blood picture of whooping cough.—(W. C. D.)

DIFFERENTIAL BLOOD COUNT AS AN AID IN THE DIAGNOSIS OF EMPYEMA OF CHILDREN.

(Louis Fischer, *Archives of Diagnosis,* July, 1908.)

Pus, be it localized in a small area or spread over a large surface, gives rise to two distinct cardinal symptoms: Fullness on percussion, and marked diminution or absence of the respiratory murmur. The temperature cure is peculiar; while in some instances the type of fever is one that will suggest intermittent fever; in other cases it may remain at or near normal.

Groccus triangle is not easily mapped out. The general practitioner will require considerable experience before familiarizing himself with this phenomena. He considers a high polymorphonuclear percentage the most valuable aid in strengthening the diagnosis, and reports the following cases:

Case 1. Small lymphocytes, 15.2 per cent.; polynuclear neutrophiles, 82.4 per cent.; large lymphocytes, 2.0 per cent.; eosinophiles, 0.4 per cent. The high polynuclear percentage supported the diagnosis and the puncture revealed pus.

Case 2. Large lymphocytes, 9 per cent.; small lymphocytes, 22 per cent.; polynuclear neutrophiles, 62 per cent.; eosinophiles, 1 per cent.; basophiles, 2 per cent.; mononeucleus,

4 per cent. The polyneuclear percentage of 62 per cent. in this case excluded the probability of pus and puncture revealed a serous fluid.—(W. M. McC.)

APPENDICITIS: EXTRA SIGNIFICANCE OF LEFT-SIDED PAIN.

(J. F. Erdman, *Archives of Diagnosis,* July, 1908.)

Erdman writes, I have called attention to the following to me, practically, pathognomic sign: "Almost invariably the little patient's place their hands in the region of the appendix to ward of manipulations in this region."

For more than half a decade I have called the attention of my consultants that pain, if present in the lower quadrant with evident tenderness, pain and resistance in the right quadrant (appendicitis in other words) and without any marked evidence of abdominal distention, signifies free fluid in the pelvic cavity, varying in character from a serous to a sero perulent in nature, although the appendix, or abscess, if present, is thoroughly walled off.

I do not recall making one failure in this diagnostic factor in a single case during this period of time. The amount of fluid is usually in excess of that ordinarily found in the pelvis and may be measured in ounces or half pints.—(W. M. McC.)

A PATHOGNOMORIC SYMPTOM (OR SIGN) OF APPENDICITIS NOT HITHERTO DESCRIBED.

(H. Illoway, *Archives of Diagnosis,* July, 1908.)

The patient is placed full length upon the table for examination. The leg is flexed upon the thigh and the thigh upon the abdomen; it is then extended at full length with a quick or rather sudden movement. If pain is produced in region of the appendix, he considers it pathognomic of appendicitis.

It may happen that forced flexion of the thigh on the abdomen, will produce pain, but if this is not due to appendicitis there will be no pain or soreness. He considers the extensoin of more value than the flexion.—(W. M. McC.)

SOME EXPERIMENTS IN THE TREATMENT AND PREVENTION OF INFECTION IN ENTERIC FEVER.

(*The Practitioner,* London, Vol. lxxxi., No. 2, Aug., 1908.)

A. Knyvett Gordon states that there are few drugs that have not been given in this disease, but it is not clear whether the change for the better be due to the administration of the particular remedy or the alterations in diet.

The experiments with drugs have been directed mainly toward the group of so-called intestinal antiseptics, in the hope of finding some chemical preparation, which would kill the bacteria in situ, or modify their power of toxin formation.

It is not pretended that any chemical preparation will neutralize the circulating toxins; and can only in theory prevent their formation by killing the organism. Any antiseptic must be soluble or insoluble in fluids of the digestive tract. If soluble the chances are that it will be absorbed before it reaches the intestinal ulcers; if insoluble it is usually passed per rectum unchanged, and has been an irritant to the inflamed intestinal lining. It is the belief of most of those who have to treat enteric fever in bulk that drugs are useless except for the relief of certain well-marked symptoms.

Gordon, after an extensive experience with chlorine solutions, salol, beta-naphthol, creosote, thymol, and menthol, has abandoned them all because he could not convince himself that they modified the course of the disease, but they did increase peristalsis or interfere with the appetite.

It is evident that the B. typhosus is pres-

ent in the circulating blood in a large per cent. of cases, therefore greater numbers of bacilli are to be found in the duodenal region than in the neighborhood of the ulcers. The bile also contains large numbers. Then they may be found in the urine in large numbers.

If we are to attempt to destroy the typhoid bacilli themselves, we must attack them in the circulating blood or in the higher region of the intestine, and it is probable we can control our results to a certain extent by observing whether the urine ceases to contain organisms of coli-typhoid groups. It is essential to select a drug that shall be highly bactericidal to B. typhosus, easily absorbable, nontoxic, and is not chemically changed by the presence of organic matter in excess. These requirements would be likely to be best fulfilled by a preparation called Medical Izal Oil. Tunnicliffe found by experiments on animals that Izal was intensely toxic to the lower forms of animal and vegetable life, and that, as the scale ascended its toxicity diminished. He found also that it had a diuretic and diaphoretic action when given internally.

Gordon gives it in the form of an emulsion, three minims to the ounce, and gives two ounces of this every two hours during the day and every four hours at night, the dose being followed in each case by a draught of water. Other drugs were given for the treatment of symptoms only, and in practice these included alcohol and opium, with chloral or bromide of potassium occasionally as a hypnotic. All patients were given as full and varied a diet as possible, and encouraged to drink freely of water.

Izal has some considerable value from the public health point of view. The record shows that the urine of those patients to whom it was given, ceased to contain bacilla of the coli-typhoid group shortly after its administration. The urine in typhoid fever patients can be sterilized quite easily by such drugs as urotropin and hemitol, but the urine is apt to contain organisms again as soon as the drug is discontinued. In the Izal series the sterility was usually maintained. Gordon would regard Izal, therefore, as a general antiseptic, rather than an intestinal or urinary disinfectant.

Summing up the results of this and of previous work on the subject, it is evident that:

1. Medical Izal Oil is a peculiarly efficient germicide in vitro for bacilli of the coli-typhoid group.

2. It can be given internally in the form of an emulsion in large doses without any ill effects, and its administration can be continued for a prolonged period.

3. It does not disturb the appetite of the patient to whom it is administered. After the first two or three doses the patients do not, as a rule, dislike it.

4. It does not increase peristalsis, and in practice tends to check diarrhœa when this is already present.

5. It acts as a diuretic and as a diaphoretic, and, therefore, increases the elimination of circulating toxins.

6. When bacilli of the coli-typhoid group are present in the urine, they usually disappear when Izal is given, and, provided that the drug is administered for a sufficiently prolonged period, the organisms do not reappear when the patient is apparently well.

7. This germicidal effect as regards the urine is not given by other antiseptics that are commonly given in enteric fever.

8. So far as these observations go, the case mortality is considerably diminished by the administration of Izal, and the disease is prone to run a more favorable course, especially in the acute stage.

9. These beneficial results have occurred, notwithstanding the fact that the administration of the drug was not begun, as a rule, until the end of the second week of the attack, and in a series from which all mild cases are eliminated.—(O. N. B.)

ON THE RELATION OF TYPHOID TO THE BILIARY PASSAGES.

BY DR. J. FORSTER.

(*Munich, Medizinische Wochenschrift,* Feb., 1908.)

The author discusses the pathogenesis of typhoid fever based upon experiments and clinical observations. He states that the typhoid bacilli which gain entrance into the alimentary tract with food or drink, etc., do not multiply there, but that they pass into the circulation, and from which are excreted into the bile. He maintains that the bacilli are not detected in the stools in the early stages of the disease, but on the other hand, are found in the blood in the incubation period as shown by the researches of Conradi. Prof. Forster says that this organism is uniformly found in the gall-bladder, and for a long time after the disease. Animal experiments show that when the bacilli are injected into the circulation that they are excreted into the bile. Although bile is not ordinarily a good culture media for the bacillus typhosus, still it is rendered so after the admixture of proteid matter, e. g., inflammatory products. This he claims would explain the occurrence of "bacilli carriers," especially where the gall-bladder was inflamed. He believes that the majority of patients cease to be "carriers" after two to six weeks, but about 2 per cent. of patients continue to excrete bacilli for five, ten, fifteen or more years. The author investigated 386 cases as to their source of infection and found that seventy-seven were due to infection by "bacilli carriers," 117 to contact infection, and the remaining 45 were attributed to water or food, etc. The finding of these bacilli carriers is quite a difficult matter. Any person who gives a history of having had typhoid and who complains of the slightest gall-bladder trouble should be regarded as exceedingly suspicious of being a "typhoid-carrier. In order to determine whether such is the case, it is advisable to try the Widal test, and if this be positive, then to resort to the isolation of the organism in the feces to be absolutely certain of your diagnosis. He advises that after the discovery of the "carrier," the next step is to prevent others from being infected. Absolute cleanliness and rigid personal hygiene is excellent, but this does not free the patient from the bacilli. Intestinal antiseptics, cologogues, lactic acid bacilli, etc., have been advocated, but without very good results. He believes that the logical treatment for the obstinate cases is nothing short of a cholecystotomy or cholecystectomy. —(W. L.)

OBSTETRICS AND ABDOMINAL SURGERY

IS PUBIOTOMY A JUSTIFIABLE OPERATION?

(An affirmative answer based on a personal experience in thirteen cases, by J. Whitridge Williams, M. D. From *Amer. Jour. Obs. and Dis. of Women and Children,* Aug., 1908.)

Dr. Williams reports thirteen pubiotomies in the hope that it may aid in determining that the procedure is justifiable. There were no maternal and three fœtal deaths. The varieties of deformity encountered were: Six generally contracted rhachitic, two flat rhachitic, two generally contracted and three funnel-shaped pelves. The true conjugates varied from 7 to 8.5 c.m. (2¾ to 3½ in.).

With the exception of two cases the operation was not undertaken until after the patient had been in the second stage of labor for from two to ten hours, and then only when advance of the presenting part failed to occur in spite of strong expulsive pains. In every case the vulva was dilated manually be-

fore beginning the operation. Döderlein's technic was used. Delivery was effected immediately after severing the pubic bone, forceps being employed in ten, and breech extraction in three instances.

Four methods have been described for performing the operation, namely, the open method of Gigli, the partly subcutaneous of Doderlein, the subcutaneous method of Bumm, and the subcutaneous symphyseotomy described by Zweifel. The open method, in which the anterior surface of the bone is exposed by an oblique or vertical incision, appears to present but a single advantage over symphyseotomy, in that by making the bone section somewhat eccentrically, the attachments of the bladder and urethra are less exposed to the possibility of infection. In a series of seventy-seven open pubiotomies collected by Döderlein, the maternal mortality was 10.4 per cent., which is quite as high as that following symphyseotomy and in marked contrast with the low mortality of subcutaneous pubiotomy. Accordingly, this method of operating has been abandoned in favor of the several subcutaneous varieties.

In Döderlein's method, before passing the curved needle beneath the bone and through the labium majus, the soft parts are separated from the posterior surface of the pubic bone by a finger introduced through a small incision parallel to the upper margin of the pubic arch and median to the pubic spine. In this way the bladder is protected from all injury during the application of the saw, while the small upper incision scarcely takes away from its subcutaneous character. Dr. Williams employed this method in all but the first case, and is so well pleased that he will continue its employment.

In the subcutaneous method, no skin incision is made, but a large sharp-pointed needle is introduced through the outer portion of the labium majus, and under the guidance of a finger in the vagina, is passed along the posterior surface of the pubic bone until its upper margin is reached, when by simply depressing the handle its point is made to emerge just median to the pubic spine. The Gigli saw is placed in position by withdrawing the needle, after which the bone is severed entirely subcutaneously. While this method is very simple and reduces the danger of infection to the minimum, at the same time it is always associated with some danger of injury to the bladder.

Zweifel reported twelve cases in which he performed subcutaneous symphyseotomy by cutting through the cartilage with a Gigli saw, which had been placed in position by means of a Döderlein needle introduced through a small vertical incision in the midline of the abdomen just above the symphysis. He contends this operation is superior to pubiotomy in that it facilitates fibrous union between the cut ends of the cartilage and thereby increases the probability of a permanent enlargement of the pelvis.

Whatever the technic used, most of the German authorities advise against immediate delivery of the child on account of the supposed increase in the danger of deep vaginal and perineal tears. They advocate allowing labor to proceed to a spontaneous delivery. Williams, on the other hand, delivered all his patients immediately. He attributes the relative infrequency of deep tears to the fact that the vaginal outlet was widely dilated manually before beginning the operation. In this event the patient can be subjected to the test of labor and pubiotomy performed only when nature has shown herself unable to overcome the resistance after some hours of strong second-stage pains.

One of the great advantages of subcutaneous pubiotomy over the open method of symphyseotomy lies in the difference in the extent of gaping, which occurs between the ends of the bone following its section. In the former the primary separation rarely exceeds 1 or 2 cm., while in the latter the cut ends immediately gape so widely as to expose the sacro-iliac joints to danger of rupture unless the

tendency to separation is counteracted by having the legs of the patient properly held by assistants. This is due to the fact that in pubiotomy the ends of the bone are held together by the overlying tissues and by attachments of the larger muscles of the thigh. Consequently, greater gaping does not occur until the head presses into the pelvis, when the ends of the bone separate from 3 to 5 or 6 cm., corresponding to the disproportion. According to Sellheim, the enlargement of the pelvis is identical in both operations, but it is necessary to employ three times as much force to bring about the same degree of separation in pubiotomy as in symphyseotomy. For that reason, the extent of gaping is proportionate to the resistance to be overcome, and consequently injuries to the sacro-iliac joints, with subsequent impaired locomotion, occur far less frequently than after symphyseotomy.

In a considerable proportion of cases, it is found on examination of the patient at the time of her discharge, that a considerable degree of motility exists at the site of section. This may be the case in spite of the development of a layer of callus of varying thickness upon the anterior surface of the wound, and occasionally even though X-ray photographs appear to indicate that firm bony union has occurred. Such lack of ossification has no effect upon locomotion. The abnormalities in that regard which sometimes follow symphyseotomy, could not be attributed to defective union, but were probably due to injuries sustained by the sacro-iliac joints. As lack of bony union does not interfere with locomotion, it is not necessary to employ a specially-constructed bed or hammock or to place the patient between sand-bags or to adopt any other expedient tending to hold the ends of the bone in apposition.

Pubiotomy is indicated in contracted pelves in which the true conjugate does not fall below 7 cm. (2¾-in.), and after a test of several hours in the second stage of labor has shown that the disproportion between the head and pelvis cannot be overcome, as well as certain cases of outlet contraction. In multiparæ with a history of repeated difficult labors or in primiparæ presenting excessive disproportion, it is inferior to Cesarian section performed at the end of pregnancy or at the onset of labor. In other cases it does not enter into competition with it, as it is the operation of choice in border-line pelves after the patient has been subjected to the test of labor, and at that time is five or six times less dangerous than Cesarian section. It should replace high forceps, prophylactic version, induction of labor and craniotomy upon the living child in uninfected women. It should not be employed in infected patients or after failure to deliver by other means.

The maternal mortality should be less than two per cent., provided the operation is performed by competent operators upon uninfected women, who have not been exhausted by previous attempts at delivery. Out of the thirteen pubiotomies performed at Johns Hopkins by Dr. Williams, there were no maternal and three fœtal deaths, only one of which was attributable to the operation.—(G. C. T.)

LATE RESULTS AFTER OPERATION FOR BENIGN DISEASES OF THE STOMACH AND DUODENUM.

(By B. G. A. Moyniham, M. R. C. S., of Leeds, England. Abstract of Symposium on Ulcer of the Stomach, before the American Surgical Association, May, 1908. From the *Annals of Surgery*, June, 1908.)

The author reviews 281 operations performed up to 1906. Of the perforating ulcers 18 recovered out of 27; 8 of those recovering required gastro-enterostomy as well as closure of the perforation if situated at or near the pylorus. All of this group are quite well. Eight of the other ten are free from stomach symptoms. Of the acute hemorrhages requiring operation 23 out of 27 are alive and 18 are quite well. Of the 205 cases of chronic gas-

tric and duodenal ulcer only 2 died from 214 operations. There are 22 cases of hour-glass stomach; 3 died: strangulated rectal prolapse, uremia, pneumonia; of those heard from, 17 are well.

He concludes:

1. Operations should be performed for demonstrable organic lesions of the stomach only, or for mechanical conditions hampering its action.

2. Ulcers of the lesser curvature that do not cause obstruction to the onward passage of food should be excised.

3. For prepyloric, pyloric or duodenal ulcer, gastro-enterostomy should be performed. The ulcer itself should be infolded wherever possible to prevent subsequent hemorrhage or perforation.

4. The no-loop operation is the most satisfactory, with the almost vertical application of the bowel to the stomach.

5. If the long loop is used anterior or posterior, regurgitant vomiting is apt to occur, but can be relieved by antero-anastomosis.—(W. D. H.)

A STUDY OF GASTRIC AND DUODENAL ULCERS.

(By William J. Mayo, M. D., of Rochester, Minn., with especial reference to their surgical cure).

The average duration of symptoms before operation was undertaken was 12 years, and every patient had received medical treatment over and over again. The only cases that do not yield to a *reasonable* amount of medical treatment should be considered surgically. In 15 years 827 operations were performed upon 768 patients, 225 were for benign conditions other than ulcer, such as adhesions and bands *resulting* from ulcer, sub-diaphragmatic abscess, etc., from perforating ulcer, bullet and stab wounds, benign tumors, hypertrophic pyloric stenosis, etc.

In tracing the development of the surgical treatment of chronic ulcer, three periods are described: (1) Previous to 1900, (2) 1900-1905, inclusive, and (3) from 1905 to the present.

In the first period only benign obstructions were operated, and while the technique was faulty and the mortality 6 per cent., the results were certain, because the patients had real, advanced, mechanical obstruction. Murphy's button was largely used, and the principle of making the opening at the lowest point was brought out in 1902.

In the second period efforts were made to forestall starvation from under-feeding and pain, by earlier operation, but whenever actual obstruction is not present, the results are not so beautifully ideal. Unless there is obstruction the food will not go out through a gastro-enterostomy opening, but continues to pass out through the pylorus. Ulcers were excised more and more, as 54 per cent. of 180 resections of the stomach for cancer showed cancer developed on an old ulcer base. After trying all of the elaborate operations of entero-anastomosis the simple posterior no-loop operation with the jejunum sutured to the left as it runs behind the stomach normally has given 300 operations with less than 1 per cent. mortality and but 3 cases have required secondary operation. Since 1905 doubtful cases have been eliminated, the establishment of a living pathology enables the surgeon to recognize the ulcer, if present, and if not no operation is undertaken except for hemorrhage.

Duodenal ulcer exists in nearly two-thirds of the cases, and for which gastro-enterostomy is ideal. For pyloric strictures Finney's operation is chosen. If the ulcer is distant from the pylorus it is excised. For hour-glass stomach the whole diseased area is excised if possible. Calloused ulcer of the pyloric end necessitates Rodman's operation of resection. The mortality of even the more complicated operations does not exceed 3 per cent. and the cures are 95 per cent.—(W. D. H.)

END-RESULTS FOLLOWING OPERATION FOR BENIGN DISEASES OF THE STOMACH AND DUODENUM.

(By John B. Deaver, M. D., of Philadelphia, Pa.)

The author asserts that stomach surgery is in its infancy, but certain pathological conditions must be overcome by the surgeon rather than the internist. He believes Kocher to be correct in the vast majority of cases when he says: "Not only can the numerous dangers of ulcerating affections of the stomach, such as hemorrhage, perforation, transition into cancer, be prevented, but the disease and its results may be so rapidly and certainly cured that the medical treatment of obscure cases must be put in the background. The pain in the stomach disappears immediately after operation. This is the invariable rule. The patient does not require to pay any further attention to the nature of his food. The vomiting disappears, the bowels become regular, there is progressive improvement in the process of digestion."

In gastric dilatation, myasthenia and ptosis about the most surgery can do is to so alter the mechanism that medical measures will become effective. He uses the no-loop clamp method. The clamps prevent leakage during the operation. "Vicious circle" is eliminated. The anterior long loop gastro-enterostomy he thinks should be eliminated. Of 66 patients operated for benign stomach conditions 66.6 per cent. were cured; 80.3 per cent. greatly improved.

Among his conclusions are: All cases of stenosis of the pylorus whether due to a neoplasm, cicatricial contraction, hyperplasia pylorospasm, or what not, would be treated by posterior gastro-enterostomy. All cases of ulcer of the stomach or duodenum which do not respond promptly to medical treatment and the various sequelæ of the disease, should be treated by operation.—(W. D. H.)

INFANTILE HYPERTROPHIC STENOSIS OF THE PYLORUS.

(By Frank E. Bunts, of Cleveland Ohio.)

The author collected 114 operations for this condition. Fifty-three recovered, and 61 died, a mortality of 35 per cent.

The paper concludes as follows:

1. Congenital stenosis and infantile stenosis are of decidedly different clinical significance.

2. Congenital pyloric stenosis would in all cases call for very early operative interference.

3. Infantile pyloric stenosis develops after birth and is often amenable to medical treatment, but in the absence of improvement an early operation offers an excellent prospect of recovery.

4. There does not seem to be as yet any positive way to distinguish between the congenital and infantile forms. The earlier the symptoms, the more probable the congenital form.

5. In selected cases pyloroplasty offers results superior to those of gastro-enterostomy, and should be the operation of choice.

6. There has been no recent improvement in operative results.

7. The one great determining cause of death in practically all cases is delay, and it is obvious that until this obstacle is removed by the medical attendant, little or no improvement on the present statistics can be expected. —(W. D. H.)

DERMATOLOGY

THE EFFECT OF THE X-RAYS ON THE SECRETION AND THE SECRETING CELLS OF THE ANAL GLAND OF THE DUCK.

(Margaret Stern and L. Halberstædter, Arch. Derm., 85, 149, 1907.)

It has been shown that marked change is produced by the application of X-rays. At first the secretion was diminished, but later the final result was a complete atrophy of the gland.—(J. M. K.)

COAL-TAR IN CHRONIC ECZEMA.

(*Jour. A. M. A.*, p. 497, Aug. 8, '08, R. L. Sutton.)

He recommends its use in the pure state to the chronic, dry, cracked and scaly lesions with considerable hypertrophy of the papillary layer and thickening of the epidermis, such lesions as are often developed on the knuckles, shins and forearms.

Apply on smooth piece of cotton cloth and fasten with bandage. After 24 or 72 hours there is an exfoliation of the superficial strata of the corneum. If the reaction is very marked omit the tar and apply plain or carbolized zinc oil (carbolic acid, 5.0, zinc oxide, 55.0, olive oil, 40.0.) until inflammation subsides; then reapply tar. The author finds tar superior to salicylic acid or other like keratolyties in these cases.—(J. M. K.)

ECZEMA AND ASTHMA.

(Berlin K. Woch, by L. Langstein, June 29, '08, xlv. No. 26.)

The author refers to the connection between asthma and eczema, and gives four cases to show that the "exudative diathesis" is the basis for the two affections. He urges the use of salt-free diet in eczema, but the same has no effect upon asthma. Salt-free diet, according to the method of Finkelstein, is very effectual in eczema.—J. M. K.)

PREPARATION OF CALOMEL SALICYLATE, YELLOW OXIDE OF MERCURY

for injections, according to the Gray Oil of Lang (*Bul. de La Societe, Fran. Derm. et de Syph.*, by M. Juan De Azua, Madrid, Feb., 1908).

M. Azua, after conducting for several years the most important dermo-syphilitic clinic in Madrid, concludes that gray oil, 50 p. 100, possesses many advantages over other formulæ.

Recognizing the frequent disturbances following injections of calomel and salicylate of mercury (0.05 to 0.10 gr.) in vaseline (1 c.c.), he determined to ascertain the cause and finally decided that it was the large dose that caused the pain and disturbance, and it occurred to him to prepare these remedies like the gray oil, 50 p. 100. Since 1897 he has used the following formula: Calomel (sublimed) or salicylate, or yellow oxide, 2 parts; lanoline, very pure, 1 part; oil of vaseline, 1 part. Any reliable syringe may be used, and to get the exact dose, first weigh the syringe, fill and weigh again. Divide the weight of the contents by the number of divisions of the syringe.

Since 1900 he has employed injections in the following order of frequency: Gray oil, salicylate of mercury, calomel. Many thousands of injections were made with the first two, while 500 to 600 of calomel were given.

Cleanse the skin on the buttock with bichloride in ether (1 to 1,000) and close the puncture with collodion. Much less pain, tumefaction, duration of indurations and tendency to pseudo-abscess when the calomel is given by the above formula. He has not been

able to render the injections of calomel as bearable as those of gray oil and the salicylate. Of the 500 or 600 injections above mentioned he observed: One abscess, 4 to 6 pseudo-abscesses, 3 symptoms of intense sciatica existing about a month.

N. B.—All these manifestations, but a greater number and with more intensity, were produced when the injections of calomel in vaseline were given.

The author would not use calomel injections in all cases and reserves two groups for it. 1. Those cases which do not yield, although well treated with gray oil and salicylate. 2. Those cases which demand the highest antisyphilitic treatment. He subdivides the second group into: 1. All syphilitics who present traces of lesions of the nervous system. 2. All those who have constitutional lesions of the nervous system. 3. All those who have sclerous lesions especially of the tongue and liver. 4. Those who have mediastinal glands. 5. The deafness and advanced interstitial keratitis in hereditary syphilis. 6. The syphilides of the palms and soles and of the cornea. 7. The tertiary syphilides in large atrophied erythematous plaques.

When the method of condensed injections becomes more general the treatment of syphilis with calomel will spread for it is without doubt the most efficacious. But the treatment should be given by the specialist.

(Fournier estimates the average dose of calomel for injection to be 5 centigrammes or 5-7 of a grain to be given once a week.)—(J. M. K.)

(Same bulletin, p. 52.)

M. M. H. Hallopean and Railliet report 5 cases of syphilis treatment by injecting atoxyl in the male at the root of the penis, and in the female just beyond the labia majora. The injections were begun as soon as the chancre was observed and one patient received 79. The secondary eruption was retarded 100 days. The report was discussed by A. Fournier, but not favorably.—(J. M. K.)

PEDIATRICS

CONGENITAL PYLORIC SPASMS AND CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS IN INFANCY.

HENRY KOPLIK, M. D.

(*The American Journal of the Medical Sciences,* July, 1908.)

This condition is very much more frequently recognized than formerly. Probably due to new methods of diagnosis and a better knowledge of the subject.

Much of the confusing and disquieting observations in the past can be explained by difference in material. The condition can no longer be considered rare. The symptomatology is very varied. In spasm or congenital stenosis the children are usually born perfectly well, two-thirds are breast fed. Vomiting begins in some cases from the first to the fourth day, in other cases seventh day, and in a great many during the third week of life, and in still others the eighth week. It may be seen in some cases upon the attempt at mixed or artificial feeding. The vomiting is at first intermittent, later becomes persistent. When the child rejects more than is taken at a feeding, showing that some of the previous feeding was retained in the stomach, it is quite characteristic. The weight is stationary or declining. Pain is often present at each feeding, as is indicated by crying at such times. Constipation is the rule. Physical examination of the abdomen often reveals a most characteristic condition. Peristalsis begins underneath the left costal border, passes forward to Traube's triangle, and there seems to stop, being interrupted by a sort of groove, and is taken up again by a second wave of peristalsis which passes on beyond the ensiform cartilage,

then downward and disappears. The author has never observed the reversed peristalsis described by some.

In some cases a careful examination during contraction in peristalsis reveals a small hard nodule, of cartilaginous consistency, situated under the border of the liver, and running downward towards the umbilicus, which the author feels sure is the pyloric end or valve of the stomach as it meets the duodenum.

Neither the peristalsis nor the palpable pylorus is necessarily present, but when either is present it is pathognomonic of certain cases of the affection. There is a normal mild form of peristalsis seen in emaciated infants, with which the above must not be confounded.

Snapping the abdominal surface with the finger to elicit peristalsis is of little value. Fever is absent. Children, after having nursed, vomit, and, strange to say, will retain fluid which is given them immediately after vomiting. Percussion of the stomach reveals little and a dilated stomach can hardly be proven in an infant.

In some cases there exists only a spasm of the pylorus, which may persist for a while and later for some reason disappear, and the child make a recovery. In other cases, there is super-added distinct anatomical change in the shape of thickening of the mucous and muscular coats of the pylorus, which may be thrown into folds and cause a stricture at that point. Even these anatomical cases may admit of improvement upon a proper diet. Whenever the spasm subsides enough to allow food to pass, improvement may be expected.

Koplik quotes Thompson as holding the opinion that there is a functional hypertrophy of the pylorus due to overwork of the stomach, brought about by the swallowing at birth irritating substances, such as liquor amnii. Its effects on the mucous membrane are not at first apparent; after a few days or weeks, however, it makes itself known and vomiting sets in.

Pfaundler insists that all cases are due to spasm, and that the so-called new tissues, or the hypertrophied pylorus, are the result of operation or post-mortem contraction, and that such a condition is quite common at autopsy in most infants. The author concludes from this that Pfaundler had not up until the time of this statement seen cases with the hard nodular pylorus felt through the abdominal wall.

A third theory is that some of the subjects have a congenital anomaly at the pyloric end of the stomach consisting in new growth or simply hypertrophy.

Koplik regards all of these theories as true in a sense. He divides his cases into those which he can show from the clinical history and subsequent course that there is a distinct condition of spasm not only of the pyloric end of the stomach, but at the pyloric valve; and a second group in which he can say from a study of the clinical symptoms that there is a congenital hypertrophy of the muscular fibres at the pyloric end of the stomach, and in some cases symptoms of a stenosis, more or less marked. Even in the latter class he has found that some may recover, although there are authorities who state that such is not the case unless operation is resorted to. He finds that errors in diet are the chief cause of the former class of cases and that the pylorus may or may not be felt.

Peristalsis is not always marked, but in spite of this children vomit, and vomit not only after every nursing, but at times reject more than is taken, on account of the peculiar condition of the pyloric valve, whcih does not allow the stomach to be completely evacuated in time for the subsequent nursing. These cases are quite common and the outlook is good.

He reports in detail eleven cases of spasm of the pylorus and pyloric valvular orifice, in which the cause seemed to be improper diet, either in the form of mother's milk or bottle feeding. Vomiting in these cases came on anywhere from birth up to eight weeks or more. Peristalsis was visible in most of them and the

pylorus could be felt near the margin of the liver in three of them. Of these cases six recovered, and five improved upon corrected diet and medicinal treatment.

He reports four cases of Congenital Hypertrophic Stenosis of the pylorus, in all of which the pylorus could be felt, and in three of which visible peristalsis was observed. Vomiting began in two of these cases at birth, one at three weeks, and one at four weeks of age. In two of these cases the diagnosis was proven by operation and by autopsy. Two of these four cases were submitted to posterior gastro-enterostomy, one of which recovered, and one of which, associated with otitis and having a temperature of 103.6 at the time of operation, died. While of the other two, one died suddenly, while under treatment and the other improved upon medicinal treatment and corrected diet.

Diagnosis.—One should try to distinguish clinically as far as possible between the classes of cases reported. In simple spasm there is persistent and full vomiting; the retentive vomiting is present in the cases of congenital hypertrophic stenosis, and associated with emaciation and constipation. In the spasm cases there may be no visible peristalsis, and the pylorus if palpable at all, is only felt as a small contracted nodule, not as hard or large as in the cases of hypertrophic stenosis. There are also, once or twice daily, stools which contain a certain amount of milk feces. In hypertrophic stenosis all the symptoms mentioned are present to an aggravated extent, but in addition there is marked visible peristalsis, and constipation is more marked.

Prognosis.—Every case of hypertrophic congenital stenosis does not require operation, and they may improve and even get well without operation. Most cases of spasm recover upon proper diet and medicinal treatment. Cessation of vomiting and all distressing symptoms do not constitute a recovery; the infant must also increase in weight and develop in a normal manner.

In a few cases there may be indications of pyloric contraction and spasms in after life.

Treatment is divided under four heads: (a) Feeding; (b) Mechanical Means of Therapy; (c) Drugs; (d) Operative Means.

Feeding is by far the most important element in the treatment.

Mechanical Means of Therapy include the application of warm cataplasms of flaxseed and hops, or dry warmth, stomach washing, and enteroclysis. According to the author, stomach washing is useless, and in some cases harmful. Small enemas of normal salt solution injected several times daily are of value to maintain nutrition.

Drugs have been of little value.

In operative treatment the mortality is exceedingly high, and Koplik feels that his chances with nature are quite as good as with operative treatment.

When operation is performed successfully bad effects may result from the portion of gut thrown out of commission by posterior gastro enterostomy. In one of his cases two years after operation symptoms of a possible stenosis of the artificial opening in the stomach are beginning to develop.—(S. M. B.)

EYE, EAR, NOSE AND THROAT

CASE OF HYSTERIA,

With very unusual laryngeal manifestations, reported before the Laryngolical Section of the Royal Society of Medicine, by Sir Felix Semon. (*London Journal of Laryngology, Otology and Rhinology.*)

A schoolmistress, unmarried, aged 28, in March, 1907, began to suffer from overstrain. Had "shivering fits" in her head, shoulders and arms, which gradually became more frequent. Next, tremor in arms supervened, and while she was getting better of these manifestations, heaviness in both legs came on.

In September, while the weakness in the left leg improved, that in the right became more aggravated, and the tremor and shivering fits recurred, and she was admitted into the National Hospital for Epilepsy and Paralysis in October. At that time none of the usual hysterical stigmata were present. There was no anesthesia, and the field of vision was not contracted. While in the hospital she gradually improved, and in November was much better so far as the weakness of the legs was concerned, but she suddenly began to stammer. The form of stammering was the ordinary one. In January, with a view of creating a mental impression, a Faraodic brush was applied to her neck, when she suddenly became mute. In spite of overaction of the muscles of articulation, she was unable to overcome this defect, and had to communicate with the outside world by writing. This continued until March. In that month the ward-sister manipulated her tongue with a view of creating a mental diversion, when the patient suddenly broke into speech such as she now possesses, and which is the reason of her being demonstrated. It will be seen that with tremendous effort and violent and visible actions of the muscles of the face, neck and particularly those of the mouth, she produces a terrific amount of voice. She is unable to speak otherwise than in this shouting manner, or even to produce a sound. At the same time her voice is absolutely monotonous and every syllable is separated from the preceding one by a distinct interval reminding one of the scanning speech of disseminated sclerosis, of which significantly enough a case was being treated in the ward, when she suddenly began to speak as she does now, though not quite like it. On laryngoscopic examination, nothing abnormal was seen during respiration, but on being told to phonate, a violent contraction of the larynx simultaneous with that of the face ensued. The present condition once more gave way to mutism for a short time, but recurred without any known cause. Her gait was rather better; the tremor of the arms was slight. She was being treated now with respiratory exercises and sedatives, but no improvement had yet been obtained.—(M. M. C.)

BOOKS

RECEIVED

Diagnosis of the Urine.—Dr. Allard Memminger, M. D., Professor of Chemistry and Hygiene and Clinical Professor of Urinary Diagnosis in the Medical College of South Carolina. Third Edition, Enlarged and Revised, with 27 Illustrations. 116 pages. Cloth, $1. P. Blakiston's Son & Co., Philadelphia.

Pulmonary Tuberculosis and All Complications.—By Sherman G. Bonney, M. D., Professor of Medicine, Denver. Octavo of 778 pp., with 189 Original Illustrations, including 20 in colors and 60 X-Ray Photographs. Cloth, $7, net; Half-Morocco, $8.50, net. W. B. Saunders Company, Philadelphia and London.

Medical Gynecology.—By S. Wyllis Bandler, M. D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital. Octavo of 675 pages, with 135 Original Illustrations. Cloth, $5, net; Half-Morocco, $6.50, net. W. B. Saunders Company, Philadelphia and London.

REVIEWED

Diagnosis and Treatment of Diseases of Women. By Harry Sturgeon Crossen, M.D., St. Louis, Mo.

The author states in the preface that the object of the book is to bring before the general practitioner dieseases of women, as met with at the office and at the bedside. He devotes but little space to aetiology, pathology and major operative technique, at the same time, he attempts to show what operations are demanded for certain conditions, and what each operation is intended to accomplish, including the preparation for operation and post-operative treatment. The book contains much that is to be commended, and at the same time, it is woefully weak in many particulars. The first three hundred and forty pages are devoted to gynecological treatment. This part of the book contains too little reading matter and too many cuts to be of much service to the general practitioner. The chapter on gonorrhoea is very good. It is unnecessary, however, to devote so much space in a book of this character to the staining of the gonoccus. The anatomy of the pelvic floor, including lacerations of the perineum, is perhaps the strongest part of the book. The author expresses himself here in a very pleasing and accurate manner, and the operative technique is taken up in full with the exception that he fails to mention Noble's operation. The chapters on inflammation of the cervix, uterus, displacements, and the non-malignant neoplasms are as good as are to be found in the average text-book. The author, in dealing with menstruation and its disorders, is very incomplete, both as regards aetiology, symptoms and treatment. Taking the book as a whole, it is one that will never rank as a standard text-book. (L. E. B.)

J. J. Enlew, M. D.
ENLEW BUILDING
Jackson, Miss.

E. C. FELLOWS
PHYSICIAN
BATON ROUGE, LA.

A DOCTOR'S STATIONERY

Is never dignified and attractive unless he has the right kind of printer do the work. Printed work, as we design and execute it, is neat and handsome, while our genuine steel die embossing, at a little higher price, simply cannot be surpassed. We will be glad to send you samples and quote prices. Write us.

Brandon Printing Co.
NASHVILLE, TENN.

THE SOUTHERN MEDICAL ASSOCIATION

Every members of the Medical Association of the States of Tennessee, Georgia, Alabama, Florida, Mississippi and Louisiana should become a member of the Southern Medical Association, whose next meeting will be convened in Atlanta, Ga., November 10, 11, 12, 1908, under the presidency of Dr. B. L. Wyman, of Birmingham, Ala.

This notice of the meeting of the Southern Medical Association is made by special request of the Committee in accordance with an effort to secure the co-operation of the medical journals in the South in extending the interest in and improving the Southern Medical Association.

If not a members already, fill the following blank and mail it with your check for two dollars:

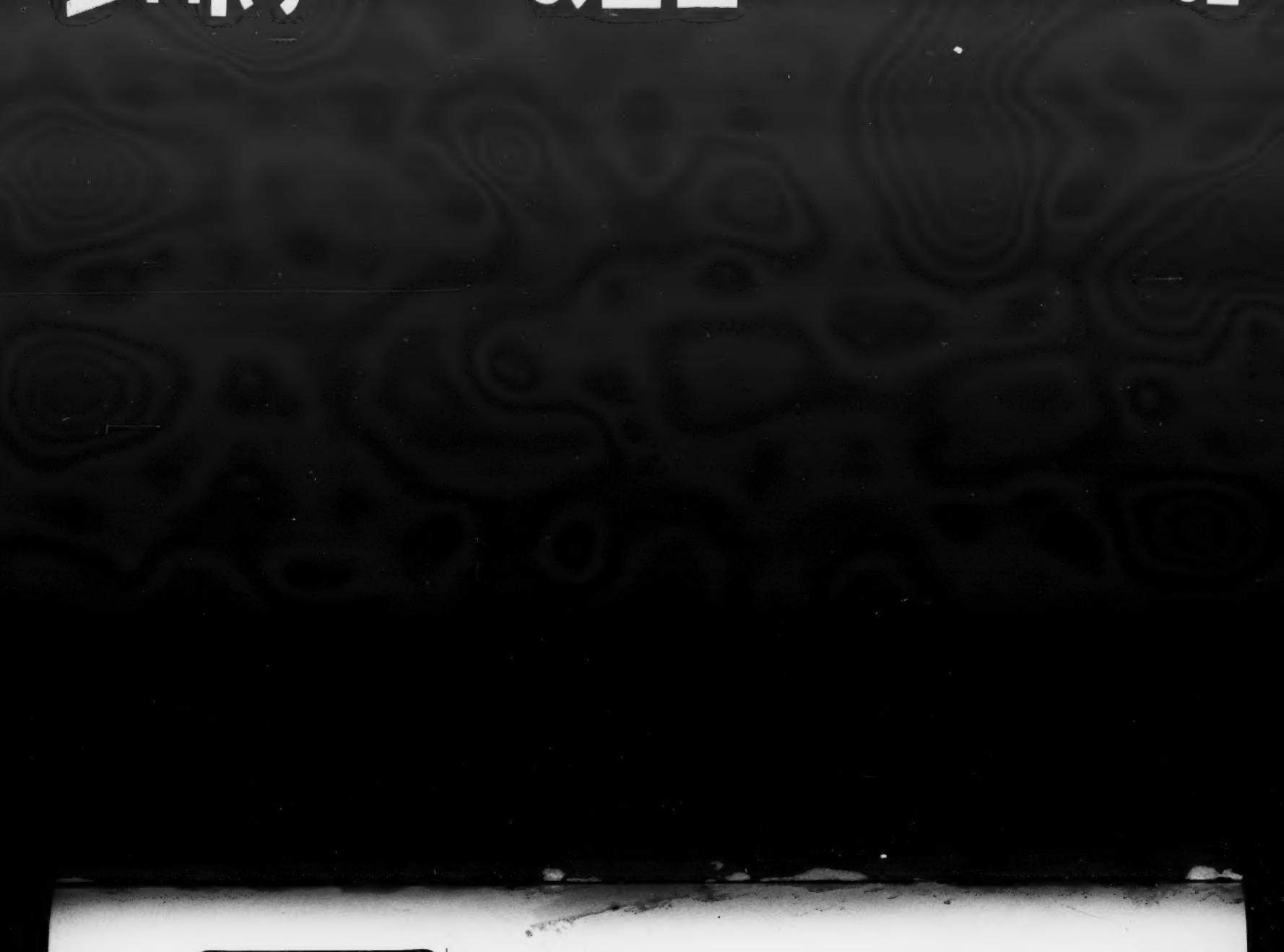
.....

Dr. Oscar Dowling, Secty.,
Shreveport, La.

Dear Doctor:—As a member of the ..... State Medical Association, I hereby make application for membership in the Southern Medical Association, and enclose my membership fee of two dollars.

..... *Name*

Address .....



BIRMINGHAM MEDICAL COLLEGE
and COLLEGE OF PHARMACY

The College is located in the greatest Industrial and Medical center in the South.

Fourteenth Annual Session Begins September 30th, 1908

The college building is a large modern building, constructed according to the most approved architectural designs for the teaching of Medicine and Surgery. Commodious and well equipped Chemical, Bacteriological, Anatomical, Histological and Pathological laboratories are provided. The Hillman Hospital, one of the largest hospitals in the South, adjoins the College building. Dissecting and Pathological material abundant. Medical and Surgical Clinical advantages unsurpassed. Large corps of professors and instructors who are specialists in their departments.

FACULTY.

B. L. WYMAN, A.M., M.D., LL.D., DEAN,
Professor of Neurology and Clinical Medicine; Visiting Physician to Hillman Hospital.

J. D. S. DAVIS, M.D., LL.D.,
Professor of Principles and Practice of Surgery and Clinical Surgery; Visiting Surgeon to Hillman Hospital.

B. G. COPELAND, M.D.,
Professor of Surgical Anatomy and Clinical Surgery; Visiting Surgeon to Hillman Hospital.

R. M. CUNNINGHAM, M.D.,
Professor of Principles and Practice of Medicine and Clinical Medicine; Visiting Physician to Hillman Hospital.

L. G. WOODSON, M.D.,
Professor of Diseases of the Eye, Ear, Nose and Throat; Visiting Opthalmologist to Hillman Hospital and St. Vincent's Hospital.

MACK ROGERS, M.D.,
Professor of Descriptive Anatomy; Visiting Surgeon to Hillman Hospital.

D. F. TALLEY, A.M., M.D.,
Associate Professor of Surgery; Visiting Surgeon to Hillman Hospital.

L. C. MORRIS, M.D.,
Professor of Gynecology and Abdominal Surgery; Visiting Surgeon to Hillman Hospital.

E. P. HOGAN, A.B., A.M., SECRETARY,
Professor of Chemistry and Toxicology; Former Chairman Faculty of Howard College and Professor of Chemistry and Biology.

J. S. McLESTER, A.B., M.D.,
Professor of Histology and Pathology and Associate Professor of Principles and Practice of of Medicine; Visiting Physician Hillman Hospital.

E. A. LUPTON, M.Sc., M.D.,
Professor of Obstetrics and Obstetrician to Hillman Hospital.

W. P. McADORY, A.B., M.D.,
Professor of Physiology; and Director of Out-door Clinic; Visiting Surgeon to Hillman Hospital.

T. D. PARKE, M.D.,
Professor Pediatrics; Visiting Physician to Hillman Hospital.

W. H. WILDER, M.D.,
Professor of Materia Medica and Therapeutics; Visiting Physician to Hillman Hospital.

JOHN L. WORCESTER, M.D.,
Associate Professor of Anatomy.

J. D. HEACOCK, B.S.,
Professor Hygiene and Clinical Medicine; Visiting Physician to Hillman Hospital.

A. F. TOOLE, M.D.,
Professor of Genito-Urinary Surgery.

W. THOMPSON BERRY, B.S., M.D.,
Professor of Orthopedic Surgery.

E. H. SHOLL, A.M., M.D.,
Professor of State Medicine, Medical History and Ethics; Visiting Physician to Hillman Hospital.

GEO. A. HOGAN, B.S., M.D.,
Professor Minor Surgery.

F. G. GRACE, M.D.,
Instructor in Medical Jurisprudence.

For Catalogue and Further Information, Address

E. P. HOGAN

Secretary Birmingham Medical College. **BIRMINGHAM, ALA.**

THIS CUT REPRESENTS

The Inhalatorium Cabinet

The Best Method for Treating

Diseases of the Air Passages and the Lungs

and also

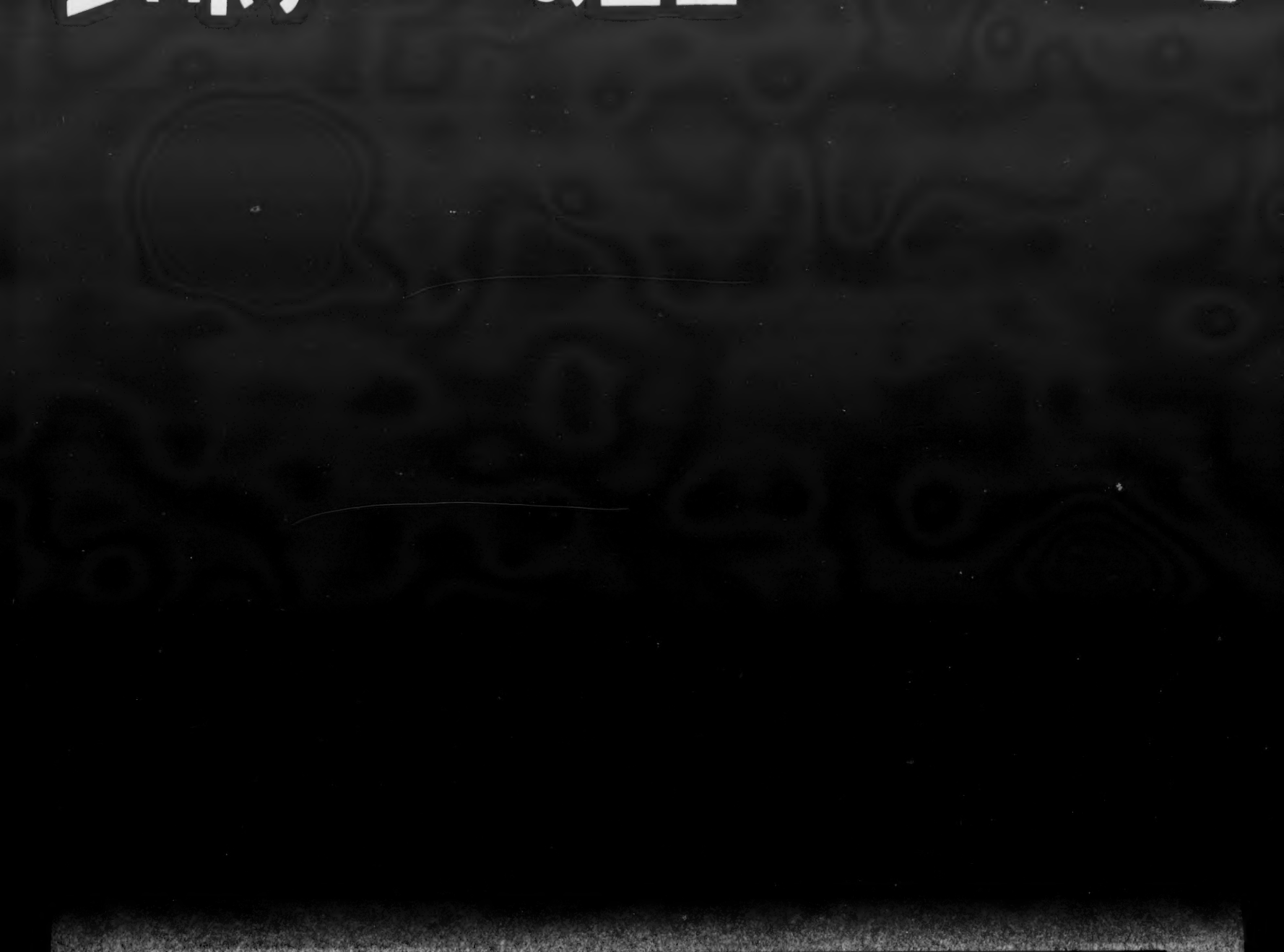
Cutaneous Affections

It is the administrating internally and locally of such drugs as you wish to use *volatilised* by *steam*. Moist, warm, volatilized medicine is most grateful to the patient, soothing and healing, and is applicable to a wide range of pathological conditions. In **Skin-Diseases** it is practically a volatilized medicated bath.

It will be sold only to reputable physicians, is strictly ethical, as much so as the use of any other medical apparatus. Endorsed and recommended by leading medical journals. More than 250 in use by leading physicians.

For terms, descriptive literature and cuts and for instructions, address

The Inhalatorium Cabinet Company

TERRE HAUTE, IND.

WANTED.—Responsible agents, physicians preferred, to sell our Inhalatorium Cabinets, on commission. Sales easily made, and we know of nothing that offers as quick returns with a splendid income to progressive physicians.